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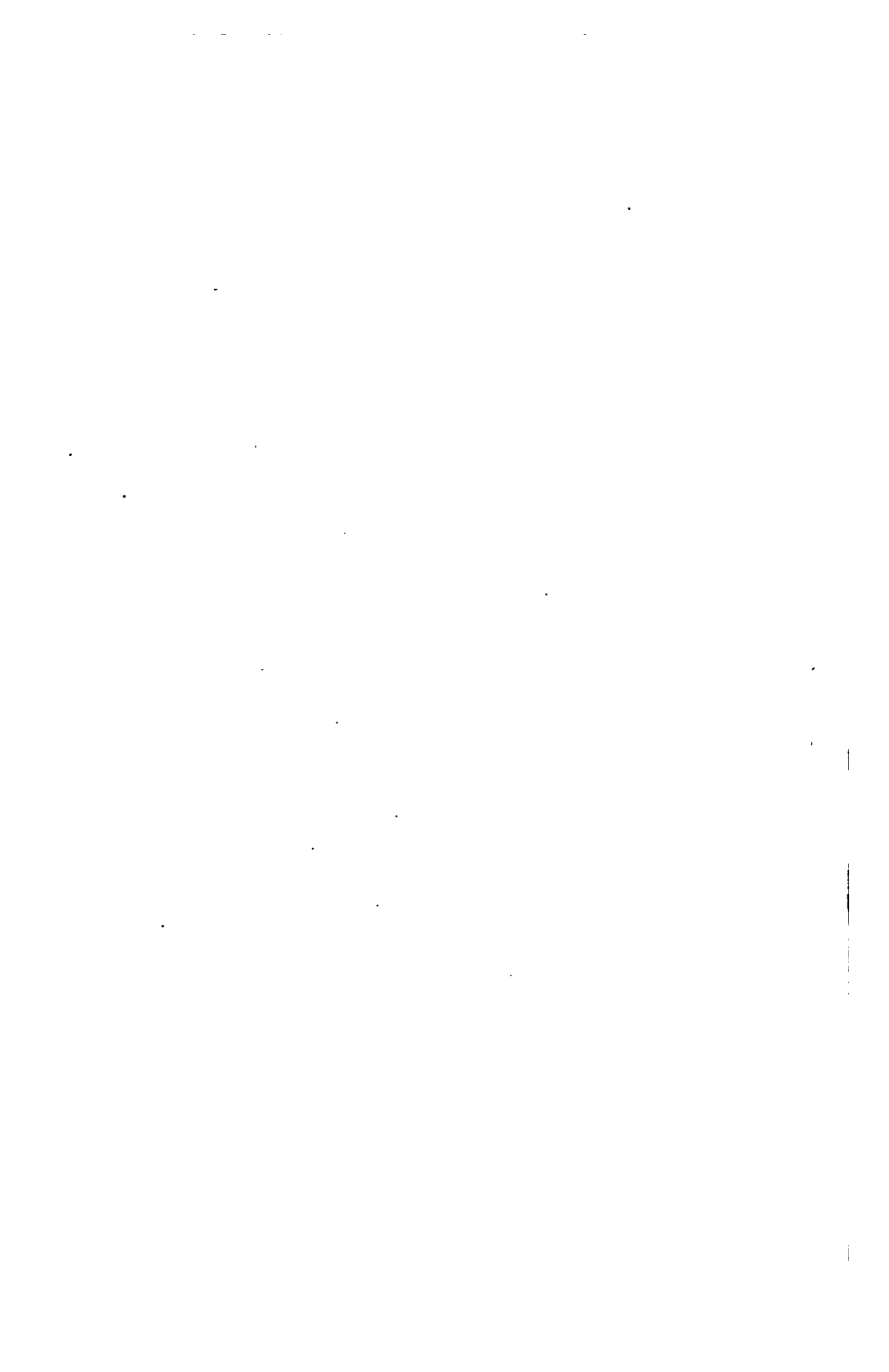
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THE JOURNAL OF

# Balneology and Climatology

*Being the Quarterly Journal of the British Balneological  
and Climatological Society*

EDITED FOR THE SOCIETY BY THE CHAIRMAN OF COUNCIL

SAMUEL HYDE, M.D.

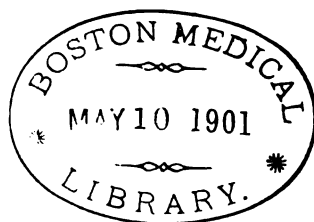
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JANUARY, 1898.

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OF

# Balneology and Climatology.

VOL. II.

JANUARY, 1898.

No. I.

## Original Communications.

### PRESIDENTIAL ADDRESS.<sup>1</sup>

BY W. V. SNOW, M.D. (BOURNEMOUTH).

GENTLEMEN,—I would call your attention to a growing evil, which I am surprised has escaped the attention of the temperance reformers. I allude to the increasing practice of taking alcoholised foods, and drugged alcohols. Any temporary convenience must be more than counterbalanced by the deterioration of good wine when mixed with food, if good wine (which I doubt) is ever used.

The patient takes this mixture for a temporary purpose; many, however, continue the practice for the sake of the wine after convalescence is established. Probably the evil results are not great, but far different is the case when potent drugs are mixed with wine, and especially the coca preparations.

In my experience this practice is largely increasing, and many neurotic women are becoming slaves to this habit, and a few, who would otherwise have had no temptation, have become addicted to stimulants. Living as you do in the health resorts of Great Britain, your influence might do much to lessen this danger to the community.

<sup>1</sup> Delivered at the opening of the Session, 1897-98.

At the request of several members of our Society I will now endeavour to give you an account of the climates of Bournemouth, and especially the effect of residence in pine woods in the treatment of disease.

In the south-west corner of Hampshire, extending into Dorsetshire, a deep indentation of the coast-line exists, formed by the separation, in prehistoric times, of "the Needles" from the opposing chalk cliffs of the Isle of Purbeck. This inlet of the sea, sheltered from the east wind by the Isle of Wight, and the west by the highlands of the Isle of Purbeck, contains three bays. The central—the Poole and Bournemouth bay—extends from Christchurch Head on the east to the sandbanks bordering Poole Harbour (a large expanse of salt water) which leads to the ancient port of Poole, famed in former days for the Newfoundland trade. A tableland stretches for eight miles on the sandy coast upwards of 100 feet above the level of the sea, and extends inland two to four miles. To the east and north this tableland slopes into the valley of the Stour, with the higher ground in the distance of the New Forest and the hills separating the valley of the Stour from that of the Avon. To the west it falls somewhat abruptly to the shores of Poole Harbour, and is sheltered from westerly gales by the range of hills between Poole Harbour and Swanage. A small valley containing a tiny stream (the Bourne) divides this tableland, the divisions being respectively called the East and the West Cliffs. Various other smaller Chines have been formed by the percolation of water through the sandy cliffs, notably at Boscombe, Westbourne and Branksome.

In the second quarter of the present century a considerable portion of this waste of sand and gravel, covered with a scanty crop of heather and unfit for cultivation, was planted with pine trees.

At the southern entrance of this valley the town of Bournemouth commenced, and contained, in 1851, less than 1,000 inhabitants; since then with rapid strides houses have surmounted the slopes of the valley, and have extended on the tableland until at the present day upwards of 70,000 people inhabit the district, 52,000 living within the limits of the corporation of Bournemouth. The main bulk of the population live



on the tableland, and almost all the working people in healthy situations in cottages built under inspection. This will probably account for the small death rate. The rate has been steadily falling, until at the last report of the Medical Officer of Health it amounted to 10·82, and the zymotic death rate ·03.

The Corporation deserve much credit for their persistent efforts to keep abreast of the times in sanitation, and they may be forgiven if, in their zeal for domestic drainage, they have become somewhat faddy, and diminished the value of house property as an investment by their requirements. In the main drainage provision has been made for any probable increase of the population for thirty years.

The water supply is of good potable quality, but somewhat hard for domestic purposes ; a boring in the chalk has recently discovered an abundant supply for future requirements ; and the directors of the Water Company have promised to adopt a softening process.

Sea-water has been laid in all the main streets. Salt water is most useful for flushing purposes, and effectual in laying dust and it is convenient to be able for a small fee to have in your house a genuine sea-water bath.

To the Corporation of those towns who think of adopting a similar scheme I must point out three disadvantages :—(1) The first cost is very great ; (2) in very dry weather the roads become slippery, and always after light rain ; (3) carriage paint is injured.

For full meteorological and geological details I must refer you to the “Climate and Baths of Great Britain.” The rainfall, however, is somewhat understated at 27·26 inches. Whatever virtue Bournemouth has in the treatment of disease is mainly due to three causes :—(1) Its southern exposure on the shores of a deep sandy bay, giving almost complete immunity from Channel fogs ; (2) the porous nature of its sandy soil, readily warmed by the sun, and the comparative dryness of its air ; (3) the accidental presence of pine woods.

Bournemouth has four distinct climates, which for brevity I will call marine, inland, valley and pine-sheltered. The marine climate commences at Southbourne, a residential suburb, more bracing than the central parts of the town. It may be said to

extend over the whole sea front, continuing inland (where, as on the western cliff, few trees exist to break the sea breezes) to Canford Cliffs, another suburb prematurely developed, but from its situation within easy reach of boating and fishing in Poole Harbour, likely to be much appreciated in the future.

The inland climate in places merges into the marine, but for a considerable distance is true inland climate, separated from the sea by extensive belts of pine trees, and open to moorland breezes at the back. Had it not been for heath fires destroying the tender seedlings, the whole district would have been covered with pine trees. Three principal plantations exist (but thousands of trees have been planted during the last twenty-five years, giving a certain amount of protection to previously unsheltered parts) :— (1) A large belt extending east of the Bourne for  $2\frac{1}{2}$  miles ; (2) Branksome Woods,  $1\frac{1}{2}$  miles west of the pier ; (3) the Talbot Woods, 1 mile inland from the sea, as yet untouched by the builder.

From its hardy nature the Scotch pine will grow in almost any soil, and flourish in any climate. In a newly-formed plantation the growth is rapid, the branches quickly cover the ground, meet and destroy the undergrowth. As growth proceeds the under branches perish and the stems rise in an old plantation as red, naked poles for twenty or more feet, and allow evaporation to take place.

The foliage of the pine is of hard consistence, and falls, during the summer, dry, forming a porous carpet which allows rain to at once permeate to the sandy soil below ; hence it is possible to use the woods for exercise almost immediately after rain. The scent of the pines is very perceptible, especially when the sun comes out after rain in the spring of the year.

Heath fires always stop at the edge of the pine plantations, as the tree and its branches in the green state are less inflammable than deciduous trees.

The one essential factor in laying out pine woods for building is that the plots shall be large enough to allow a sufficient number of trees to be cut down to the south to obtain the full effects of winter sunshine, while shelter is retained to the east and north. On still, frosty nights the temperature is somewhat higher

than in parts unprotected by pine trees at a similar distance from the sea front, but the thermometer gives no real measure of the protection from cold. It is well known that considerable cold is scarcely felt when the air is still, but on the rising of wind very severely ; hence the protection of the pine trees on a cold, windy night is considerable, amounting to quite the difference between a thin and a thick great coat.

Some fifteen years since the valley was thoroughly drained, laid out in public gardens and planted, with great advantage to the climate. Its chief value to the town is in providing long walks and drives in complete shelter from north and east winds, and as an avenue of approach to more extensive drives in the Talbot and Branksome woods. In the valley you have shelter both from the hill and pine woods. Comparatively speaking, few houses exist in the lower part of the valley, but a larger number have been built on the slopes and in the central parts of the town, which we utilise for those who require extreme shelter, and especially for elderly people.

From the description of the soil and surroundings you will readily see that certain affections must be rare. The ordinary form of bronchitis which fills the London hospitals in winter, and leads each year to increasing emphysema and dilatation of the heart, is never seen in the resident population. Such a case has not been admitted to the Royal Victoria Hospital during the last five years.

Acute rheumatism is almost unknown ; the cases I have seen come from outside or have suffered from this affection before residence in the district.

Asthma is also a rare disease, even in the children of asthmatic parents.

My colleagues, the surgeons and medical men in practice among the working classes, tell me strumous affections are rare and that there is no special tendency to anæmia in those living in the inland climates. Many domestic servants, however, suffer from anæmia, generally contracted before their arrival ; these cases are difficult to treat. Those employed and living in the lower part of the town are also frequently affected.

The female telegraph operators have very bad health ; this,

however, is due to the nature of their employment. Few young women can stand the constant work of a Head Office, and the Government make a mistake in using their services where the strain is severe ; men even find it trying.

Early favourable cases of pulmonary tuberculosis may be placed in any part of the tableland, and sometimes do better on the West Cliff than in the pine wood climate, but if the symptoms are at all acute, and especially if softening with fever has commenced, a residence should be selected among the pines of the East Cliff.

Cases of chronic quiescent pulmonary tuberculosis, with moderately secreting cavities, do exceedingly well in the pine climate, and should as a rule be sent there for their first winter ; afterwards, and especially if they improve and are young, they may with advantage live in the inland climate or on the West Cliff a little back from the sea ; if they become residents often the inland climate is the most suitable, especially if fibroid changes are present.

A number of consumptives have spent many winters abroad, and the disease has become chronic ; as years advance they tire of expatriation, and ask their physician if no place can be found in England where they can make a home and enjoy the society of their friends.

To those who have resided years in Bournemouth and seen how well these cases do, and how often they reach almost the allotted span, the answer is easy, take a house in the pine woods, you will be able to live there ten months in the year, and probably will live longer with your home comforts than if you continue to spend your winters abroad.

Many also of those living in bad climates, especially in crowded cities, who are slowly but certainly reaching the last Bourne, may with advantage be advised to reside in the pine woods ; although recovery may be hopeless their lives may be prolonged, and they may be able to spend many hours in the open air often almost to the last.

In cases of phthisis complicated by recurrent hæmoptysis, I have no hesitation in recommending the pine climate ; I can from long experience say that I see less hæmorrhage there than

in other parts of the district, and that many cases who have suffered in previous winters from hæmoptysis, entirely or almost entirely escape even when the disease is progressive.

Residence in pine forests has a sedative influence, and styptic effects have been claimed from the emanations from the trees; probably, however, the shelter from cold winds is the most potent factor.

When the larynx is affected the patient should be placed in the deeper parts of the pine wood climate, some hundreds of yards from the sea front. The sedative effect of residence in these parts is most marked, and I have noticed that a considerable percentage of patients in the early stage, when the lungs are not gravely affected, improve, provided no active interference with the local malady is adopted.

In the whole district, even where the disease is progressive, night perspirations rarely give trouble. The effect of residence in pine woods is also sedative on cough.

Scrofulous diseases are uncommon and are greatly benefited by residence; the marine or inland climates should be selected.

Cases of chronic bronchitis decidedly improve in any part of the tableland, but if the patient be above 50 and affection severe, the pine wood climate or the more sheltered parts of the West Cliff give the best results.

It is impossible to indicate where cases of asthma will do well; the larger number, however, improve, especially children and old people. With such a variety of climate if one part does not suit another may; while children at school having frequent changes and elderly people do well among the trees, I prefer the inland climate for those in the prime of life.

Convalescents from acute pneumonia in which resolution is delayed, do well; the climate can also be recommended for cases of empyema after operation.

Chronic albuminuria is one of the diseases for which persons take up their abode in Bournemouth; the results of residence are most satisfactory and I know many cases who are now in good health who on their arrival were not expected to receive any permanent benefit.

The results in chronic rheumatism vary, but the majority of

people improve ; the sea front and the dense part of the pine woods should be avoided, and the more sheltered parts of the inland climate selected. •

The treatment of asthenic gout is also satisfactory, but middle-aged men, accustomed to much exercise in cold northern climates, suffering from sthenic gout do badly, and can only live in the more bracing parts of the inland climate.

Residence can with confidence be recommended to those who have suffered from malaria and dysentery, and especially those who have lived in India or similar climates.

As a whole Bournemouth may be said to possess a fairly bright and dry climate. From the large area of the town compared to the number of inhabitants the atmosphere is pure, while the dry, porous soil presents decided advantages in the open-air treatment.

In conclusion, I cannot but express my deep sympathy (in which I am sure you all join) with the sufferers at Maidstone. A law ought to be passed defining the liability of the water companies when, from the culpable negligence of their officials, the health of the community supplied by them has suffered. Although corporations cannot, without the constant pressure of public opinion, be trusted, yet on the whole the water supply is safer in the hands of municipal authorities.

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A PROPOSAL TO ESTABLISH CHAIRS OF MEDICAL  
CLIMATOLOGY AND MEDICAL GEOGRAPHY IN  
THE BRITISH AND COLONIAL SCHOOLS OF  
MEDICINE.<sup>1</sup>

BY ALFRED HAVILAND, M.R.C.S.ENG., &c.

MR. PRESIDENT AND GENTLEMEN,—At a meeting of the Council of the British Balneological and Climatological Society, held at 9, Cavendish Square, W., on Friday, the 8th Oct. last, Dr. Samuel Hyde in the Chair, I gave notice that at this, the first General Meeting of the Session 1897-1898, I would submit the following resolution for your consideration; in accordance, therefore, with that notice I now have the pleasure and honour of moving the following propositions :—

“(1) That it is expedient in the interests of the public health and for the advancement of medical science, that the ancient and important branches of medicine, *medical climatology* and *medical geography*, should be recognised by the Medical Examining Boards throughout Great Britain, Ireland and the Colonies, as essential parts of a student's medical education at the several schools of medicine within the British Empire.

“(2) That provision should be made for carrying out the above proposition by the establishment of chairs of medical climatology and medical geography at the several medical schools, from which courses of lectures could be delivered on these subjects during the summer session.

“(3) That each student shall be examined on the said subjects as to his proficiency in them, at such times during his course of study at his medical school, or at the termination thereof, as may be deemed most desirable by the Examining Boards.

“(4) That this Society, if the Fellows approve of the above propositions, do appoint a committee to consider the best mode of bringing them to the notice of the General Medical Council, the Medical Examining Boards, and the authorities of the Medical Schools, and then report to this Society the results of

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<sup>1</sup> Read before the British Balneological and Climatological Society, December 1, 1897.

their inquiries for the future guidance of the President and Fellows in carrying out these resolutions."

Such are the propositions that I have ventured to submit to this meeting for your consideration, and in doing so feel that, so far as the subject is concerned, I need make no apology to you as Fellows of a Society established for the purpose of promoting the study of "airs, waters and places;" not only in their relations to British health resorts, but to the habitations of the human race generally; in fact wherever knowledge can be acquired, whether at home or abroad, that will aid us in revealing the hidden causes of the many remaining problems that meet us at every turn, when endeavouring to grasp the connection between certain diseases, and certain conditions of mind and body, and certain *local climates*, the outcome of complex environment, in which the soil, the waters and the atmosphere teeming with microscopic, animal and vegetable life, take so prominent a share.

Medical climatology was taught at the earliest school of medicine on record—that in the little island of Kos, in the Greek Archipelago, over which the Great Hippocrates presided more than 400 years before the Christian era; who not only recognised the value of iatro-meteorology, and the great aid it afforded to clinical medicine, but from his vast stores of facts culled during a long life within the boundaries of his widely-spread practice along the coasts of Asia Minor, Thrace and Greece itself, was enabled to trace the intimate connection between certain prevailing disease-forms and certain local climates; to the peculiarities of which he attributed the conditions brought about in the atmosphere as influenced by the configuration of the country, and by the nature of the soils on which it reposed or passed over.

Again this wide and lengthened experience acting upon a mind ever receptive, ever fertile in resource and suggestion, forced him to conclude that a great field lay spread before the profession of medicine, which, if assiduously cultivated, as he had commenced to do, would in the future yield a plentiful harvest in the form of the solution of some of the many problems that then puzzled his busy brain, when pondering over the mysteries of *disease-distribution*.



Thus we see that under the enlightened influence of the great master the dawn of these two great branches of medicine, *medical climatology* and *medical geography*, began to illumine our profession in the far East from the little school of medicine in Kos, and doubtless would have brightened into true science had the fostering care bestowed upon them at first been continued by the successors of the founder, who first gave them life. But death claimed the great father of medicine more than two thousand two hundred years ago (2254), a dense cloud overshadowed the cradle in which his offspring had dawned, and had it not been that he had enshrined his facts and discoveries in his immortal works, especially in those entitled "Airs, Waters, and Places," his "Aphorisms" and "Epidemics," we should never have realised the vast width of that gap that separates the period, when these branches of our science were recognised as parts of a medical education, and the present time when they are ignored in our medical schools.

We must now, however, leave repining behind and address ourselves to the question before us. Never before in the annals of British medicine has there been such unbounded confidence in the efficacy of "change of air;" never has there been so many coastal and inland towns and villages converted into what are called "health-resorts," as there have been during the last few years; and the public, not content with what are accessible at home, must now seek others abroad, in too many instances going farther and faring worse. Again, during late years Europe and the Mediterranean, having lost some of their charms, India, Australia, Africa and the Americas have been explored for "pastures new," as the literature of the day proves, teeming as it does with volumes and pamphlets setting forth the wonders of the places their authors have visited during their vacations or otherwise; and in too many instances ending in recommending these hitherto unknown localities as eligible health-resorts, especially for the poor consumptive.

Now, all this praiseworthy energy on the part of the public and the medical profession in their mission for discovering new resorts calculated to promote convalescence or arrest disease, whether at home or abroad, could not fail to be of essential

service in the cause of science and of those special branches with which we are concerned this evening, if it were guided by a previous sound knowledge of the principles on which they are based. But let us ask how many of the hundreds of authors who have undertaken the perilous task of writing up health-resorts have emerged from the portals of their medical schools sufficiently grounded in the principles of medical climatology and medical geography to qualify them for such an undertaking? How few young practitioners enter the profession sufficiently equipped to draw up a report on the climate, geology, and disease-distribution of the county or even of the town in which they reside! How bitterly many regret that this part of their medical education had been grossly neglected I myself can testify: for during the course of my investigations throughout Great Britain during the last thirty years I have met with a great number of instances amongst the brightest and the most intellectual of my professional brethren. I remember well when I first determined in 1854 to make the study of medical climatology my pursuit in the midst of active practice, how seriously I felt myself handicapped at the onset of my studies, simply because I was thoroughly ignorant of the very first principles of this branch of medicine, owing to its being ignored in the medical school where I was educated.

It is still ignored—not only in my old school but in all the others which were advertised in the students' number of the medical journals at the commencement of this winter session.

As you all well know, I could support the propositions that I have brought forward by many more illustrations of the evils which it is my earnest desire to see remedied, but I hope I have said enough to convince you that it is not without reason that I urge you to give this subject your serious consideration.

In conclusion, I will ask you to reflect on the advantages that will accrue to the public and the rising generation of medical men by the establishment of chairs of medical climatology and geography in the British schools of medicine, inasmuch as, by doing this, their fields of observation will be greatly enlarged, and their observed facts all the more valuable because they will be collected by those who know how to discriminate between

the false and the true. Spread as they are throughout the Great British Empire, with its endless variety of local climates, soils, and diseases, they will form an army of educated observers, who in a very few years will have accumulated such a vast number of facts as cannot fail in the near future, when arranged, digested, and correlated, to be capable of such generalisation as to render these branches of science of incalculable service to preventive medicine, as well as to the better understanding of the relations that exist between the many factors of local climates and the diverse diseases with which they are associated.

At the Annual Meeting of the British Balneological and Climatological Society, held at 20, Hanover Square, W., on October 27, 1897, Dr. William V. Snow, of Bournemouth, President, in the chair, the first of the above propositions was moved as a resolution by the author of the paper, seconded by Dr. C. Theodore Williams, of London, and having been put to the meeting was carried unanimously. It was then agreed that the resolution be referred to the Council, when the best means of carrying it out should be discussed, and a Committee formed for that purpose.

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## THE TREATMENT OF SYPHILIS BY EXTERNAL METHODS.<sup>1</sup>

BY JOHN A. SHAW-MACKENZIE, M.D. (LOND.)

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MR. PRESIDENT AND GENTLEMEN,—The external method of administration of mercury by inunction has recently been the subject of considerable attention.

This method is systematically followed at Aix-la-Chapelle, various well-known Continental spas, and at the Hot Springs of Arkansas, while at the recent meeting of the British Medical Association at Montreal, Dr. W. Whitla, Professor of Materia

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<sup>1</sup> Read before the British Balneological and Climatological Society, December 1, 1897.

Medica and Therapeutics at Queen's College, Belfast, testified to the efficacy of inunction treatment.

The only matter of surprise to me, is that the external methods have not long ago been systematically adopted in this country. For forty years Mr. Henry Lee has advocated such methods, and though he has systematically urged calomel fumigation, he has also practised inunction, in certain cases, founded on the method adopted by Pearson and Brodie. If moreover, we follow the history of the treatment of syphilis in this country and abroad, we find that inunction and fumigation have claimed attention from almost the first employment of mercury in the fifteenth century, and that there has been a constant leaning towards diaphoretic treatment. This further found expression in the combination of mercury administered internally with antimony, sweet spirits of nitre, spirits of wine, laudanum, Dover's powder, guaiacum, sarsaparilla, and "sudorific woods," together with hot baths, hot mineral and sea baths, the vapour bath, sweating chair, and violent exercises; while at one time advocates arose in favour of sudorific or climatic treatment alone, and without mercury.

Ambroise Pare (1517-1590) "gave a decided preference to mercurial frictions, above any other mode of treating it (the venereal disease) yet he regarded mercury as bringing on a crisis and effecting a cure by the evacuations which it produced, rather than by any other quality."<sup>1</sup>

Pearson, to whose work I am indebted for the preceding as well as the following, states that the fumigation machine was described by Nicholas de Blegny, in 1683.<sup>2</sup>

Also that in 1736, "An empiric of the name of Charbonnier, appeared at Paris, professing to use mercurial fumigation after a new mode. . . . He was permitted to select some patients in different hospitals for the subject of his experiments. . . . Many patients really affected with *lues venerea* were undoubtedly cured by this man, yet it must be admitted that he failed in several instances, and what is still more important, a greater proportion of people died under this mode of treatment. . . ."<sup>3</sup>

On account of this, it was discontinued and nearly abandoned, when M. Lalouette, in 1776, published a new method of treating the venereal disease by fumigation.<sup>4</sup>

Cirillo, a practitioner of some eminence at Naples, in 1784 advised the employing of corrosive sublimate mixed with hog's lard in frictions to the soles of the feet. He also advised the patient to go into a warm bath once every three or four days, and was of opinion that mercury so administered operated principally on the kidneys and skin.<sup>5</sup>

If we follow the teachings of authorities in our own country we find that John Pearson, in 1800, Senior Surgeon to the Lock Hospital, with an experience of twenty thousand cases, employed inunction with mercurial ointment, and hot baths. Moreover, he thought that "the attempting to cure a patient without confining him to the house, will seldom succeed."<sup>6</sup>

In 1786-7, he also made a considerable number of experiments with fumigation, and came to the conclusion, "that when the body is covered with venereal ulcers, or where the eruptions are large and numerous so that there scarcely remains a surface large enough to absorb the ointment, the application of the vapour of mercury will always be attended with evident advantages. . . ." But he thought it also right to add "that it is extremely difficult to introduce a sufficient quantity of mercury into the animal frame in this way so as to secure the patient against the hazard of a relapse. . . ."<sup>7</sup>

In 1829 John Bacot states, "I am fully prepared on this occasion to join Mr. Abernethy in extolling the advantages of these fumigations when employed judiciously, and believe with him that they are fully capable alone of radically curing many of the forms of syphilis; they may be recommended with the utmost confidence in many of the primary forms of ulcerations, as well as in the cure of secondary affections . . . . They are perfectly safe, they afford an effectual and safe means of affecting the constitutions of pregnant, or delicate females, and infants."<sup>8</sup>

Abraham Colles, in manuscript notes, "apparently intended to be used in the second edition of this work," quotes Brodie's views on a scrofulous case sent him for opinion. "He thinks the safest mode of administering mercury is by fumigation."<sup>9</sup>

The observations and practice of Sir Benjamin Brodie himself are in point when he says, "That except in the slighter forms of

the disease, we cannot depend upon the internal administration of mercury for a cure. We may in this way patch up the disease, but it will return over and over again," and again, "you may cure it at last by a course of mercurial ointment properly rubbed in."<sup>10</sup>

Samuel Lane in 1841-2 stated, "There can be no doubt, however, of the efficacy of the fumigation in all cases where mercury is required, and I trust I have left the impression on your minds that both the external modes of influencing the system with mercury are only inferior to its internal administration, inasmuch as the latter method is accompanied by less trouble to the patient, while the former possess the no inconsiderable advantage of interfering less with the intestinal mucous membrane."<sup>11</sup>

Fumigation was advocated by Langston Parker. In 1860 he states :—

"I have known several instances where disease which has been rebellious to large quantities of mercury given for long periods yield immediately the baths were employed. When I employ mercury internally during the use of the bath, it is either under the form of the biniodide or bi-chloride not exceeding 1-20th grain" . . . "I never saw the most delicate patient, male or female, whose health was injured under the plan I recommend, and I have very rarely seen a disease that has not been cured, the experience derived from the treatment of many thousand cases warrants me in speaking thus positively on the subject." . . . <sup>12</sup>

In 1856, in the *British Medical Journal*, July 24, and August 14, Mr. Henry Lee published tables of 275 cases satisfactorily treated by calomel fumigation, a perfected method for which the profession is indebted to him.

In 1863 and again in 1870, Mr. Lee published in his Lectures on Syphilis that the satisfactory conclusions arrived at with calomel fumigation in 1856 might be emphatically repeated, while I find in Dr. Sidney Ringer's *Hand-book of Therapeutics*, 13th edition, p. 264, the following :— "This mode of administering mercury is considered the best and surest way of eradicating syphilis. . . . There can be no doubt that many cases of syphilis rebellious to other treatment yield to these fumigations."

At the present time, in this country, though the external methods have been advocated by various authorities, treatment by small and repeated doses of mercury internally is in the main followed, and few facilities exist for external methods in hospital work. The large amount of chronic syphilis which, however, is met with, more especially perhaps among hospital patients ; the new methods of intravenous injections of mercury, lead to the supposition that the internal administration of mercury lacks something of completeness, and that in the hands of the few, the efficacy of the internal method is a tribute to individual experience and care in details of administration, or general circumstances of patient, rather than to inherent advantages in the method itself.

Having had the privilege of witnessing the details of external methods of treatment, though chiefly fumigation, in a large number of patients, in the practice of Mr. Henry Lee, I venture to trespass on your time (to-night) and submit for consideration some of the principles which appear to be involved in the treatment of syphilis, and which appear to me to justify external methods of administration of mercury and skin therapeutics with indoor treatment, as opposed to the administration of mercury internally and outdoor treatment.

In the first place I would refer shortly to the natural course of syphilis uninfluenced by treatment, and consider some of the explanations of natural immunity, or cure itself.

In the male, it is not, in these days, easy to see the course of syphilis, apart from treatment. It is generally admitted that mercury is in some way or other necessary, and few cases escape initial treatment. Abernethy, however, emphatically gave his adhesion to the disappearance of syphilitic lesions in the male without the employment of mercury in certain cases.<sup>18</sup>

We occasionally see the same at the present time, and so also in the spontaneous disappearance of syphilis, consequent on some inter-current attack of enteric fever, erysipelas, variola, or other pyrexia. In the female it is I think generally admitted that syphilis is for the most part less severe than in men, and therefore natural immunity may in them be perhaps better and more frequently observed. As a good illustration I would point to the fact that a woman who has acquired syphilis in the usual way previously

to or during conception, though her symptoms during pregnancy may be aggravated, or reappear in subsequent conception, loses her symptoms after full pregnancy and delivery, apart altogether from treatment; through processes in herself, and probably independently of the syphilitic offspring she bears. In the modern view that syphilis depends on the acquisition of a specific micro-organism acquired immunity in the male may perhaps be explained by elimination of virus through the skin, and natural excretions as well as by nutritional metabolic or phagocytic processes, including production of toxins or antitoxins, which tend to destruction of the micro-organisms, reduction of their numbers or inhibition of their activity. That phagocytosis plays some important part in natural cure must I think be assumed from the general involvement of the lymphatic system in every case of syphilis. In the female increased nutritional, metabolic, or phagocytic action, may I think be assumed in menstruation, but especially in those processes involved in full pregnancy, involution or lactation, as well as elimination of virus from the system in the blood losses of menstruation, parturition, lochia, or diseased product of conception itself.

In support of the theory of elimination of virus from the system I would quote the following:—

James Whitehead, on the Medical Staff of the Lying-in Hospital, and Lecturer on Obstetric Medicine at Manchester in 1851, clearly expressed in his work on Hereditary Diseases the view that in syphilis, "there appears to be a constant endeavour in the system to expel the poison through the emunctory organs. . . . The organs most susceptible of secondary syphilitic action, and through which its expulsion from the system is commonly attempted are those of generation and the skin; in the male subject the latter, in the female, the generative organs seem to be selected by preference in the two sexes respectively." <sup>14</sup>

Dr. J. F. Payne places the same on a scientific basis when he states that, "It is one of the oldest traditions in medicine that diseases which produce an exanthematous eruption are thrown off by the skin, which expressed in modern language, means that the poison is eliminated by exfoliated epidermis and by the cutaneous secretions.



"Considering the case of syphilis there is nothing impossible or improbable in this theory."<sup>15</sup>

And he further states that physiological leucocytosis occurs in pregnant women, and is also observed after copious hæmorrhages which is suggestive in itself of increased and temporary phagocytosis.<sup>16</sup>

If we now return to the explanation of the efficacy of mercury in syphilis it may be assumed that in whatever way mercury is introduced into the system it is probably bactericidal in action.

This may explain the satisfactory results which are obtained by those who employ the method of internal administration.

In this method mercury is also nutritional in small doses, possibly diuretic, while some diaphoretic action may be ascribed to it alone, as well as to the usual combination of opium, or Dover's powder. In salivation and increased evacuation from the bowels, (though constipation is not uncommon in those undergoing mercurial treatment) mercury may be eliminative, but this latter action is modified in the necessary reduction of dose, or cessation of treatment.

On the other hand, I venture to claim for fumigation, and I think also for inunction not only bactericidal effects, but the better fulfilment of those principles which underlie natural immunity or cure, and which mainly are elimination of virus from the system and general nutritional metabolic or phagocytic action.

The bactericidal effect of mercury administered externally probably takes place in two ways.

It takes place directly at the points of exit of virus,<sup>17</sup> and also probably directly reaches those superficial lymphatic structures and absorbents in which from their general involvement in syphilis, activity of virus in early disease probably, and for the most part especially lies.

In addition in fumigation and also in inunction, mercury reaches the blood through the respiratory passages (Dr. Feibes, Aix la Chapelle), which not only may be locally beneficial, but is generally beneficial in not interfering with digestive processes or tending to salivation or diarrhoea.

In the second place in promoting skin action, natural elimination of virus is promoted through the skin. It is

further claimed that "balneo-therapy increases the action of mercury and iodine," and causes rapid excretion of mercury from the system<sup>18</sup> probably to some extent through the kidneys.

If we refer for one moment to the exanthemata, routine treatment usually aimed at is protection from cold, promotion of diaphoresis, diuresis, evacuation from the bowels, and promotion of respiratory function, and general hygienic measures.

Ill development or suppression of rash in them is equivalent to severity or malignancy, and every therapeutic endeavour is made under such circumstances to promote skin action and eruption. I venture to say that in syphilis the external methods of treatment follow and fulfil such principles.

Furthermore, in scarlatina, which in its eruptions on skin and throat simulates syphilis, the object of emunctory treatment is to relieve the kidneys.

In the same way, Mr. Lee considers that fumigation determines syphilis to the skin and superficial parts, and shelters internal organs. He always looks "with a degree of suspicion upon instances in which the eruption on the skin is slight or ill developed, they are the cases in which the disease proves most tedious and in which internal parts are most likely to be affected,"<sup>19</sup> while he can scarcely recall gross lesions of the nervous system, or internal organs following the careful and detailed primary use of the calomel bath.<sup>20</sup>

It may be contended that mercury given primarily and internally does not suppress the secondary eruption, but prevents them by the destruction of virus at the outset, but few cases of syphilis thus treated are free from some secondary symptom, and nature at least for two years, is endeavouring to expel the poison by the skin or mucous membranes, and it is impossible to believe that such is contributed to by internal administration of mercury and outdoor treatment.

Without taking up unnecessary time with details of treatment which may be found in many of Mr. Lee's works, I will briefly say that as regards calomel fumigation, if satisfactory results are to be obtained the patient must give himself up to treatment, for Mr. Lee considers indoor treatment in the main

essential, with freedom from cold, wet and exposure. The amount of calomel to be used is very much larger than is to be found in Mr. Lee's earlier writings, or in any standard works and if practitioners have failed with fifteen or thirty grains, they may be more successful with sixty, ninety or one hundred and twenty, which may be safely employed from day to day, with due regard to the state of the gums and weight of patient, sublimed from a porcelain receptacle, and not one of metal, while the patient sits surrounded by a cloak or in the ordinary wooden cabinet, or portable Turkish bath.

The calomel used is that known as chemically pure calomel, *i.e.*, re-sublimed calomel, which is less irritating to the respiratory passages, especially if water is evaporated at the same time from a separate dish. The trouble of the external methods, and the undesirable attention it may attract, is urged against fumigation and inunction, as against simplicity of mercurial pills, and outdoor treatment, but the simplicity of internal administration has its disadvantages in leading to irregular courses, and greater length of treatment. Although Mr. Lee has published three months as the period of treatment necessary under fumigation,<sup>21</sup> I had the advantage of again asking him a few days ago, how long he considered treatment necessary under fumigation. He told me that in the majority of cases his experience was three months, though it varied with circumstances in individual cases.

In reference to cases I treated myself ten years ago, for that period by fumigation, I can assert some have remained in good health up to the present time, while others have repeated a course at some later period, while I have in the last twelve years seen a large number of patients in Mr. Lee's practice who have returned, ten, twenty, thirty, and one or two, forty years after treatment in good general health, or with some superficial throat, genital, or skin lesion, when the course has been repeated. Many of such cases have been considered by Mr. Lee to be cases of re-infection, and not relapse, a further proof to my mind of the efficiency of this method. Mr. Lee's own views are expressed in the following: "I know how often it has been asserted that the disease is not cured,

but a long experience now enables me to say very positively, as I have before remarked, that numbers of patients after having gone through a proper course of treatment, pass five, ten, fifteen, or twenty years without any fresh manifestations. They believe themselves to be cured, and whatever impression may be left upon their constitutions, no inconvenience subsequently arises either to themselves or their families. In this sense syphilis may be cured as well as any other recurrent fever to which the human body is liable."<sup>22</sup>

I am well aware no method of treatment will with certainty insure a patient against relapse ; moreover, there are cases which appear to be insusceptible to mercury ; at the same time the method of fumigation which on the authority of Mr. Lee, has in the main the advantages of brevity, and prophylaxis, must commend itself, and must outweigh considerations of simplicity or expediency which are claimed for internal administration. It is asserted by some that effectual treatment means initial treatment. I cannot assent to that, at least in its application to fumigation. Even as regards other methods, Abernethy's teachings are so much in point that I cannot refrain from quoting his words. "In recommending prudent delay and attentive observation I hope and believe that I am not recommending anything likely to be of dangerous consequences . . . " It cannot I suppose be thought that I would advise anyone to wait till an ulcer destroyed the velum pendulum palati, or did material injury to any important part . . . for it seems to me better to let the disease exhaust itself, than suddenly to cure it, as in the latter case, it is very likely to return.<sup>23</sup> In furtherance of that view I would refer to Mr. Lee's clinical conclusions already stated, and also quote Mr. Arthur Cooper.

He states "that clinically general macular and papular eruptions appear to be less common precursors of late visceral affections, than ill marked and scanty. Obstinate frequently recurring lesions of the skin and mucous membranes, also are rarely associated with visceral disease," and he further mentions the frequent failure of the physician to elicit any history of early symptoms in those who suffer at a later period from grave

visceral lesions, especially from syphilis of the nervous system." <sup>24</sup>

This has been answered by the suggestion that such patients having had few or no secondary symptoms, have not considered it necessary to pursue efficient treatment.

I am not inclined to agree, but think rather that elimination primarily has been defective, though there has been a deceptive appearance of security.

Mr. Lee has further expressly stated that unless a patient is prepared to follow out treatment systematically by fumigation in primary disease "he had better wait until the secondary symptoms appear, and then undergo treatment." <sup>25</sup>

Such advice in the light of natural elimination of virus is theoretically correct, and authoritatively taught by Mr. Lee, is clinically sound, as many also must affirm who are in the habit of treating patients in the eruptive stage, who have had little or no treatment in the primary.

My own experience leads me to think, that initial treatment is not essential, and that eruptive stages in men, and the involution period after abortion and delivery in women, are effectual and prophylactic times for treatment, at which periods patients are apparently more susceptible to the influence of mercury.

The question of climate, the season of year, and the state of the weather are worthy of consideration in aids of treatment, for there is no doubt that the influence of mercury is more evident in the warmer seasons of the year, and in mild weather than in exposed situations, and in inclement, harsh, or damp weather. I have indeed been told that it is impossible to get a patient under influence of fumigation in exposed places. I am, however, convinced that in inclement seasons, or in exposed situations the indoor treatment is essential, and that the amount of mercury requisite and length of treatment varies in proportion to the rigidity of the latter, and perhaps in proportion to individual susceptibility to the influence of mercury, or individual power of sweating.

In patients who are compelled to lead an outdoor life, my experience leads me to think even the larger doses may be inefficient, and in such cases inunction may well supplement fumigation, or entirely take its place. Langston Parker, stated

that in his experience "in a great majority of cases the moist mercurial vapour bath as I have directed, is capable of curing the disease without the assistance of internal medicine, but the cure is generally expedited and rendered more certain by the administration of the latter in small quantities. It may be very advantageously combined with frictions of small quantities of the stronger mercurial ointment . . ."\*

It may be noted that this authority did not attach the same importance to indoor treatment and freedom from cold and wet which Mr. Lee considers essential.

Of the value of Sulphur in certain cases I have no doubt, administered internally or externally. The vapour bath and Barege bath may with benefit be varied with fumigation at the end of a course of the latter. It helps to remove chronic eruptions, is diuretic, relieves constipation when it exists, and it will often give an impetus, like iodide of potassium, to a flagging mercurial treatment.

At Aix la Chapelle and other Continental Thermal Springs, and at Arkansas it is claimed that larger doses of mercury and iodide are tolerated, but my experience with fumigation leads me to suggest that efficient treatment does not so much depend on the amount of these drugs introduced into the system as in the method of introduction and their association with sudorific, eliminative, and nutritional measures.

In respect of Sulphur we have Harrogate, Llandrindod, Builth, Lisdoonvarna, Moffat Strathpeffer, which last with its pure air and beautiful surroundings in the Highlands of Scotland attracted the attention of my first master, the late Mr. Berkeley Hill, while Helouan offers advantages in the winter months.

Of the value of iodine and the iodides in removing later symptoms no one has any doubt, though there is doubt as to its capability alone in insuring freedom from relapse. During a course of mercurial treatment, I believe this drug is of distinct advantage when given in small doses as an aid to mercury. After, or during a course, its administration in the form of waters or in combination with iron, is of undoubted efficacy. In the *Lancet* of January 21, 1843, I came across the following statement which seems to me appropriate. "The iodide of potassium possesses the remarkable property of causing determination of diseased action

to the skin. In cases of what may be termed 'Suppressed Measles, and Scarlatina,' it will frequently induce a healthful reaction under the most desperate circumstances." <sup>27</sup> The iodides may therefore be in some measure eliminative in syphilis. They are also no doubt diuretic in action, and further beneficial in breaking up insoluble albuminates of mercury which may have been deposited in the tissues.

My kind friend Surgeon-Col. Ligertwood, informs me, that in his experience among the old Pensioners, at the Royal Hospital, Chelsea, iodide of potassium is a cardiac tonic.

The advantages of fresh air were advocated by Pearson, in the days of erythism. The same including mountain, and sea air, sea voyages, Chalybeate, arsenical, and various mineral waters, as promoters of general health, after mercurial courses, or in debilitated states, or in chronic syphilis, are too well known at the present time for me to enlarge upon them.

Amongst the manifold manifestations of chronic syphilis, I would like, with your permission, to refer to chronic pelvic disease in women.

My experience leads me to think that unsuspected syphilis is responsible for some of the chronic invalidism, rheumatic affections, and pelvic trouble in parous women; for some cases of pelvic trouble in young adult and single women the subjects of inherited syphilis, while tuberculosis inheritance is sometimes another name for syphilitic inheritance.

As regards the first, I referred in the *Lancet*, April 16, 1896, to "the constant and spontaneous complaint of mothers who in gynæcological practice attribute their ill health to abortion, or confinement, with no history of previous illness." The complaints under this head commence with subinvolution, which proceeds frequently in spite of ordinary treatment to chronic pelvic disease in its various forms of displacements of the uterus and ovarian and tubal disease, while throat affections and superficial syphilitic lesions are often associated.

I do not wish to deny the septic, and gonorrhœal origin in certain cases, but I am convinced the constitutional, or syphilitic origin is overlooked in many, and I venture to submit as I have elsewhere done, the primary and prophylactic treatment of subin-

volution of the uterus after abortion and delivery, by mercury and iodide, as opposed to ergot and curetting.<sup>28</sup>

As regards the second, viz., pelvic diseases in young adult and single women, the presence (sometimes in sisters), of relaxed throats, menorrhagia, pelvic inflammatory conditions (aggravated perhaps by subsequent marriage and conception) sometimes notched, or peg-topped teeth (Hutchinson), with superficial cicatrices about the mouth, history in the mother of "ulcerated womb" and abortions with pelvic trouble through life, point to the inherited origin, which I have known confirmed by positive history of syphilis in the father, previous to marriage, in one or two cases.

As regards the third, I would point to the constant history given by syphilitic mothers, that they have lost children by some form of chest, or scrofulous disease, and also to lesions of the lung and pneumonia in syphilitics.

Many of the chronic cases above mentioned derive deserved benefit from sudorific, mineral water, and climatic treatment at our own health and continental resorts, but I venture to assert, many are and would be benefited by additional and associated mercurial treatment.

I cannot conclude these remarks without pointing out as far as my own opportunities for observation are concerned, that syphilitic sequelæ in women are especially to be seen amongst out-patients attending Women's hospitals, and amongst gynæcological cases in the out-patient rooms of General hospitals; to a large extent amongst married women of the respectable poor; that little or no provision is made or is perhaps possible under existing circumstances for the admission of such cases, and that consequently little or no facilities exist for adequate treatment by external methods of administration of mercury.

I know the many difficulties of finance and other questions, and yet I venture to think there is no room for the extension and advancement of therapeutic measures as opposed to surgical, and that the question of reception of such cases into special wards in existing hospitals is deserving of consideration at the present time, not only in the interests of patients themselves, but in the furtherance of general prophylaxis.



1. "Observations on the Effects of Various Articles of the Materia Medica in the cure of Lues Venerea," preface, p. xxviii.
2. *Ibid.*, p. 122.
3. *Ibid.*, p. 120.
4. *Ibid.*, p. 121.
5. *Ibid.*, p. 103-4.
6. *Ibid.*, p. 127.
7. *Ibid.*, p. 123.
8. "A Treatise on Syphilis," pp. 259-60.
9. "Selections from the works of Abraham Colles," edited with annotations by Robert McDonnell, p. 75.
10. "Lectures on Syphilis" by Henry Lee, p. 101.  
The Works of Sir Benjamin Brodie, vol. iii., p. 292.
11. "A Course of Lectures on Syphilis," *Lancet*, January 21st, 1843, p. 610-11.
12. "The Modern Treatment of Syphilitic Diseases," p. 322.
13. "Surgical Observations," p. 108 *et seq.*
14. "On the transmission from Parent to Offspring of some forms of Disease and Morbid Taints," p. 266.
15. "Manual of General Pathology," p. 631.
16. *Ibid.*, p. 355.
17. "Lectures on Syphilis," p. 180, p. 105.
18. Nessler (A.) *Berliner Klinische Woch.*, April, 1897.  
THE JOURNAL OF BALNEOLOGY AND CLIMATOLOGY, October, 1897, p. 381.
19. "Lectures on Syphilis," p. 182.
20. *Lancet*, May 6th, 1893; *Ibid.*, April 20th, 1895; *Ibid.*, May 29th, 1897.  
(H. Lee.)
21. "Syphilis," p. 324; "Lectures on Syphilis," p. 120.
22. "Lectures on Syphilis," p. 115.
23. "Surgical Observations," pp. 140-1, p. 144.
24. Quain's "Dictionary of Medicine," vol. ii., p. 973.
25. "Lectures on Syphilis," p. 120.
26. "The Modern Treatment of Syphilitic Diseases," p. 321.
27. News and Correspondence.
28. N. W. Lond. Clinical Society, November 17th, 1897.

## UTERINE HÆMORRHAGE AS AFFECTED BY THE CLIMATE OF ALTITUDES.

BY SEPTIMUS SUNDERLAND, M.D.

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CHRONIC bleeding from the uterus is oftentimes so difficult to overcome that one grasps at any hopeful plan of dealing with it satisfactorily. I have therefore thought it necessary to bring to the notice of the profession the strikingly beneficial though temporary effect of a high altitude in three cases of obstinate menorrhagia, which was recently forcibly brought to my notice.

A lady, aged 39, with chronic enlargement of uterus causing severe menorrhagia, for which I have frequently prescribed during the past few years, was sent by Dr. Symes Thompson to winter at St. Moritz (about 5,800 feet above sea-level) in 1896-7 on account of contraction of lung caused by influenzal pneumonia. She was accompanied by her daughter, aged 13½, who had been under my care for several months for the menorrhagia of puberty, which was with difficulty kept in check by drugs.

CASE I.—The mother when she first came under my notice four years ago had for some years been obliged to use as many as forty sanitary towels at each period, and in addition suffered from irregular attacks of hæmorrhage. Treatment abolished the latter and reduced the periodical flow, which, however, had always remained excessive, as many as twenty-five to thirty towels being necessary at each period. During the three and a half months passed at St. Moritz three periods were seen ; their duration was shorter, there were fewer clots, and the flow was diminished in quantity about one half, only twelve to fourteen towels being worn.

CASE II.—The daughter's menstrual function had begun six months before leaving for the Engadine ; the periods had been very profuse with a fortnight's interval between

them, and had lasted five days, about fifteen towels being worn at each flow. During her stay at St. Moritz there was an interval of a month between the periods, which lasted only four days instead of five, and the quantity was reduced to about one-half.

So far so good, but after their return to England at the end of March, the periods returned both in mother and daughter in the same quantities and with the same frequency as before. Drugs, however, have now diminished the quantity in the girl.

CASE III.—A lady, who suffers from climacteric menorrhagia, for whom I have prescribed on several occasions during the past summer (1897), has recently returned from a stay of five weeks at Arosa (altitude about 5,500 feet) whither she accompanied her son, who had been sent there by his medical attendant. During her stay at Arosa she had one period, which lasted four days instead of the usual time, seven or eight days. She states that she lost only about half the quantity of blood she had been in the habit of losing during the past fifteen months, and that instead of having repeated sudden gushes, there was a steady flow throughout.

I have not been able to find any recorded statement of the usual effect of a high altitude on chronic uterine bleeding, and Dr. Holland of St. Moritz, under whose care the first two patients were placed during their stay, has favoured me with the information that he has made no special observations on this point.

But the marked diminution in the amount of the menstrual flow in these three cases raises the question whether residence at a high altitude should not be recommended in certain cases of chronic uterine hæmorrhage, where ordinary methods of treatment, including curetting, are of no avail, and in which it is important to check the hæmorrhage in order to spare the patient the more serious operation of extirpation of ovaries, or of uterus. There are many cases of uterine hæmorrhage in debilitated subjects—especially from fibroids—in which the risk of a major operation is dreaded by some surgeons as much as by the patient, and it is for

such cases that I myself in future shall feel disposed to advise residence for a time at a high altitude. I would also suggest a trial in menorrhagia due to subinvolution of the uterus after childbirth or miscarriage, which do not respond to treatment or curetting. Sufferers who can bear the expense, would be glad to avail themselves of the chance of relief afforded by such a change of climate, and it is possible, if benefit be experienced from a short stay, that a prolonged residence might produce a curative effect, which was not found in the three cases I relate. At any rate, even a temporary cessation from the draining, debilitating sanguineous flow would improve the anæmia and consequent feeble condition of such patients, and give a little time for recuperation of strength and health, which would assist them materially to bear their ailment, even if it should recur on returning to their ordinary place of residence.

Further, the attendant anæmic state would be improved because both the number of red corpuscles and the amount of hæmoglobin are considerably increased directly after arriving at an elevated region from a plain, probably (up to a certain point) in direct proportion to the altitude. The experiments of Paul Bert proved that the blood of animals living in high altitudes, absorbs more oxygen than that of similar animals living at ordinary elevations, and successive experiments of Müntz, Viault, Egger, Mercier and Miescher have gradually proved the facts I have just stated, with regard to the increase of red corpuscles and hæmoglobin.

It will be interesting to determine whether the highest elevations available in Great Britain can be made use of to any extent in such conditions, and I believe they may. In seeking for a rational explanation of the causes of the lessened menstruation in the cases I relate, it must be conceded that a low temperature was certainly one important factor in diminishing the amount of the menstrual flow. I have frequently noticed that many women menstruate less in winter than in summer, and we know that "some English women of feeble development menstruate in summer only and others too freely in hot countries, though not at home" (Robert Barnes), while some menstruate in hot countries and not in England. And since the temperature falls in ascending mountains about one degree Fahrenheit for every three hundred

feet (with certain exceptions in connection with situation, shelter etc.), I consider that it is certainly worth while trying such elevations in our own country for many patients who cannot bear much expense and do not care for exile to more elevated localities abroad—especially for those who habitually reside in moist, relaxing and low-lying neighbourhoods. These moderate elevations would be also worth trying for numerous nervous and excitable patients, who cannot reside at a very high spot without suffering from distressing nervous symptoms. In selecting such a place in Great Britain an elevated region with a low mean temperature should be chosen, where the air is as free from moisture as possible and the soil well-drained and dry; for in addition to a low temperature as a factor in the diminution of the flow in the cases I have related, one must conclude that the dry tonic bracing climate had a beneficial effect by improving the general condition of the patients.

Possibly this bracing effect may also act through the nervous system by controlling the phenomena which regulate menstruation.

Whether the improvement in the quantity and quality of the red blood corpuscles (which I have already referred to) caused by residence at a high altitude, had any effect or not in preventing free exudation of blood from ruptured or unruptured capillaries of the uterine mucous membrane, it is not easy to determine. One might imagine this to be the case, remembering that on descending to plains after residence on mountains, the red corpuscles in human blood diminish again in number and quality (though usually only to the normal standard), and that in two of the cases under consideration the menorrhagia recurred soon after the patients returned home. We may, I think, at least assume that during residence at a high altitude, the muscular tissue of the uterus and the walls of the uterine capillaries and small veins become firmer and less liable to rupture, in common with the increased nutrition, and generally improved condition of all the tissues of the body; also that there is less venous congestion owing to the more frequent pulsations of the heart and to better tone and contractile force of the heart and of the arteries supplying the uterus, and to improvement in the whole circulatory apparatus.

*But apart from all these causes I would suggest that the lessened*

*barometric pressure which obtains at a high altitude may have an important effect in warding off and in diminishing hæmorrhages.*

I have not been able to find any written opinion on this point, but Dr. Theodore Williams in his book on "Aerotherapeutics" gives the results of experiments he once made on the use of compressed air-baths in phthisis. His results appear to show that the *compressed* air-baths are *not* beneficial in cases complicated with hæmoptysis. He quotes two cases in which hæmoptysis came on during the bath, and four cases in which hæmoptysis came on during the treatment.

Dr. E. Hugh Snell, in his book on "Compressed Air Illness," gives some instances, reported by various observers, of hæmoptysis, epistaxis, and congestions of various organs of the body occurring in men during or directly after working in diving-bells or in "caissons"; these latter are cylinders, used for the foundation of piers and bridges, in which two, three, or four atmospheres are compressed into one; also in tunnelling and excavating, when compressed air is used to keep out the water, bleedings from the nose and lungs have been noted.

In a most interesting article contributed to the *British Medical Journal* (in 1896, I believe) Dr. Thomas Whitelaw, of Edinburgh, stated that he "had come to the conclusion that there is a marked affinity between a *high barometer* and hæmorrhages of various kinds, especially when the blood-vessels are not in a healthy condition," and he gives sufficient evidence to be impressive, quoting various cases of hæmorrhage occurring on days when the pressure of the atmosphere was unusually high.

The writings and observations of these gentlemen support my impression that the low atmospheric pressure at an altitude may be an important factor in the prevention of certain hæmorrhages from the uterus, though the exact explanation is not easy to determine.

As an example of the lowered atmospheric pressure at altitudes I give the following :—

Assuming the barometer to stand at 30 inches at sea level, the corresponding reading at an altitude of 5,800 feet would be about 24 inches; therefore, about one-fifth of the weight of the atmosphere would be removed. Roughly speaking we must deduct one

inch from the sea-level reading for every thousand feet of altitude, a very slight correction being made for the difference in temperatures.

Now, in seeking for an explanation of the lessened hæmorrhage due to any possible change in arterial tension, one finds that the careful experiments of Fraenkel, Geppert and Paul Regnard appear to prove there is no *appreciable* change in arterial tension during residence at a high altitude. Personally, I think there must be slight variations in arterial tension (probably diminutions), occurring during the first few days, which may have escaped notice.

*How then can we account for such a beneficial effect on hæmorrhage being due in some measure to the diminished atmospheric pressure?*

*I am thinking that possibly the diminution in the weight of the super-imposed column of air on the surface of the abdomen and in the lungs may act by lessening the pressure on the internal abdominal organs and large veins thus allowing a more free flow of blood through the large veins and portal system, and diminishing uterine congestion. (Dr. Paul Regnard says hepatic congestion and hæmorrhoids are improved at a high altitude and this he attributes to improvement in digestion; perhaps diminished pressure on the abdominal organs and large veins may also account partly for this.)*

Also, indirectly owing to diminished air-pressure (on account of the smaller quantity of oxygen contained in the air of high altitudes), during the first week of residence at an altitude the pulsations of the heart and the respirations are quickened and then gradually fall to the normal; the quantity of rarefied air also which enters the lungs is increased, but falls gradually to the normal after the first week. Now, books on physiology teach that the acts both of inspiration and expiration are favourable to the venous circulation, assisting the flow of the venous blood into the heart; *therefore*, assuming this latter to be correct, *I consider that the increased respirations which always occur at high altitudes should materially assist in relieving congestions of the pelvic and abdominal organs and be of benefit in preventing uterine hæmorrhage.*

This note may help to dispel from the minds of some medical men the fallacy—which is fairly common—that a high altitude is provocative of hæmorrhage.

Theodore Williams, with his large experience, has found high altitudes especially beneficial in hæmorrhagic phthisis. Haller and others have conclusively shown by carefully handled and criticised statistics that hæmorrhages from the lungs of phthisical patients are much less common on mountains than on plains.

Dr. Paul Regnard, of Paris, in his fascinating book on "*La Cure d'Altitude*" deprecates the common idea that the lessened air-pressure produces hæmorrhages from the air-passages and gives excellent reasons to explain the very rare hæmorrhages from the nose and ear which occasionally occur in healthy mountain climbers.

In conclusion, therefore, considering the evidence I have brought forward of (1) Dr. Theodore Williams's experiments, (2) Dr. Snell's writings and careful collection of facts, (3) Dr. Whitelaw's observations, (4) the scarcity of hæmorrhages from the air-passages both in healthy mountain-climbers and of phthisical patients (as proved by various authors), in conjunction with (5) my own limited observation of the decrease of menorrhagia in the cases I have related, I will say I feel justified in believing for the present :—

(1) That a high dry climate is beneficial to certain cases of chronic uterine hæmorrhage, which do not respond to ordinary treatment, and that, if practicable, residence at a high altitude should be tried for as long a period as possible in cases where operation is not absolutely necessary, or is inadvisable from various reasons, or would prove unusually dangerous.

(2) That a high altitude would probably be found useful in certain hæmorrhages and congestions other than pulmonary or uterine.

(3) That in addition to other causes which produce the effect of diminishing uterine bleeding at a high altitude, the lessened air pressure is an important aid.

*Addendum.* (Case IV.)—Since writing the above I have within the last few days seen a lady suffering from a bleeding fibroid tumour, who has consulted me occasionally during the



past three years. She lives in a moist, relaxing neighbourhood in a southern county, but passed the latter part of September and the whole of October (in 1897) in a very high part of Yorkshire. During that time she had one period, and reports that she was much surprised to find there was a very marked decrease in the amount of the flow.

This encourages me to suggest more strongly, that trial should be made in such cases of the moderate elevations at our command in Great Britain, such as the available parts of the Kent chalk-hills, Malvern, Hindhead and Grayshot, Buxton, Harrogate, Llandrindod Wells, and many other localities. Possibly a permanent residence at such places might materially alter the future progress of some fibroid growths in which one fears a rapidly unfavourable issue.

I am regretting that I did not arrange to read this paper before a meeting of the Balneological and Climatological Society, so that I might have received the benefit of the experience and criticism of the Fellows of the Society. I am hopeful of laying before them, at some future date, the notes I am collecting on the effect of climate on menstruation.

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## HYGIENIC AND CLIMATIC CHARACTERISTICS OF THE SOUTH-WESTERN PROMONTORIES OF IRE- LAND.

BY PATRICK LETTERS, M.D. (VALENCIA ISLAND).

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IF the map of Ireland be glanced at, the peculiarity of conformation of the south-western seaboard at once strikes the eye. Here the sea penetrates into the land further than elsewhere, and long tongues of land, terminating in bold bluff headlands, shoot out into the Atlantic. This region has a climatology of its own, distinct and exclusive, which is not, however, either so generally known or so well appreciated as it deserves to be. On these ocean-laved promontories the climate is softer and

more equable the year through than elsewhere throughout the British Islands.

The south-western extremity of England, between Plymouth and the Land's End, bears some resemblance in its physical and climatic peculiarities.

The promontory of Cornwall, like south-west Ireland, is mountainous, though not so grandly so; it is also sea-washed, though a close examination of the maps will show not so extensively. It runs further south, it is true, to the extent of a degree and a half, than the mouth of Bantry Bay, but this advantage is more than balanced by the fact that Kerry lies as far west of Cornwall as the latter does of London; and in the British Islands a westerly longitude has far more to do with geniality of climate, in winter particularly, than a low latitude.

As a whole county, it would appear from the map that Cornwall is more completely enveloped by the ocean than either Cork or Kerry; but let the coast-lines be traced, and it is found south-western Ireland has closer oceanic relations than south-western England. The same indented character of coast-line is seen in west Scotland from Cape Wrath to the Clyde, and here also the climate is, comparatively speaking, an equable one, and for the same reason. Its much higher latitude, however, and the fact that its longitude is no further west than Cornwall, shut it out from competition with south-west Ireland as a balmy region, although it should be remembered that Cape Wrath enjoys a higher mean temperature in the depth of winter than places so far south as Kent, Sussex, or even the Isle of Wight. The district in Ireland characterised by this deeply indented coast-line extends from Tralee Bay to Cape Clear, including all between. The most westerly point in Ireland and also the most southerly are embraced within these bounds.

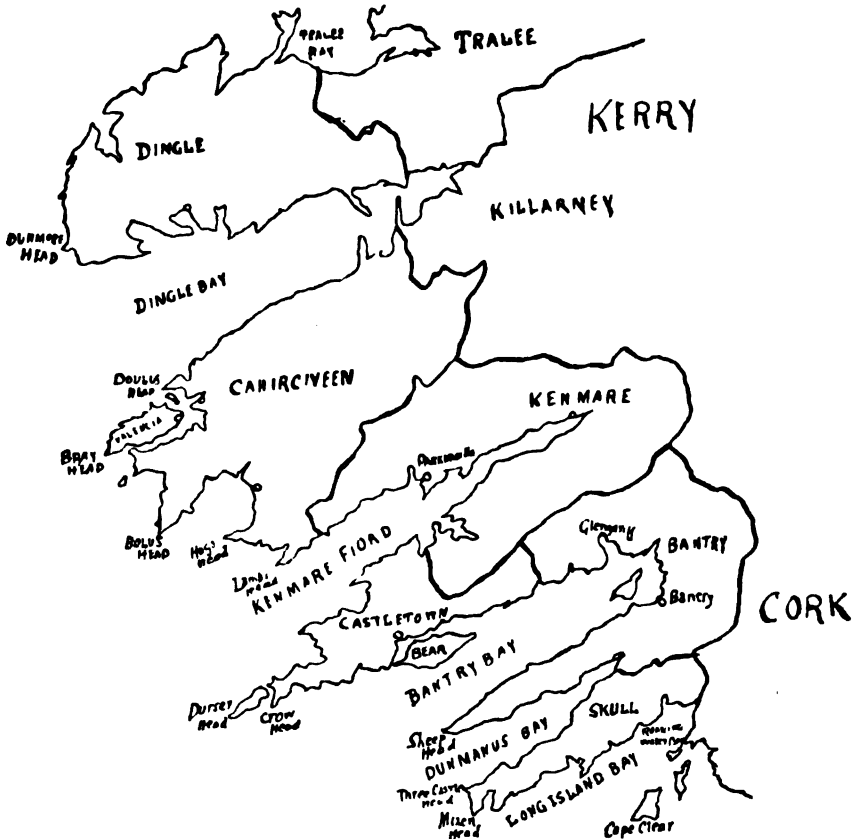
Tracing the coast-line from Tralee Bay, the peninsula of Dingle juts out from the mainland a distance of twenty-seven miles, terminating at Dunmore Head, the most westerly point of Europe, if we ignore Iceland. The southern coast of this peninsula forms the northern shore of Dingle Bay, a wide, open, though somewhat shallow expanse of the Atlantic. From Dunmore Head across the mouth of this bay to Valencia Island the

distance is thirteen miles, and the bay itself up to Inch Point is twenty miles in length, measured from a direct imaginary line between Dunmore Head and Valencia. Some ten miles south of Valencia, at Bolus Head, Ballinskelligs Bay is entered, a horse-hoof-shaped sheet of water, five miles wide but eight or nine long, if measured from Bolus Head to Waterville. Ballinskelligs Bay is bounded on the south by Hog's Head, which also may be looked upon as the northern extremity of the great trumpet-shaped mouth of that noble fiord misnamed the Kenmare River. The southern extremity is formed by Dursey Island, and the distance across is fourteen miles. Some eight miles in from the extremity of Dursey Island, Kenmare Bay becomes narrowed by the projections of Lamb Head on the north and Cod's Head on the south to a width of about five miles. From this contracted entrance the fiord trends into the land for some twenty-eight miles, salt as the open Atlantic all the way. If measured from its widely-opened funnel-shaped mouth between Hog's Head and Dursey, the Bay of Kenmare is not under thirty-five miles in length. Bantry Bay begins between Crow Head and Sheep Head, the distance across being thirteen miles, and runs inland for twenty-eight miles. Between Bear Island and Sheep Head this bay is five miles wide, and it maintains a uniform width of between three and four miles up to its head beyond the town of Bantry, opposite which its width is again increased to seven miles by the offshoot of Glengariff Harbour.

Dunmanus Bay is entered between Sheep Head and Three Castle Head. The distance across is over four miles, and it runs into the land for fourteen miles. Mizen Head, the most southern point of Ireland, is some three miles distant from Three Castle Head. Rounding this Long Island Bay is entered. This extends sixteen miles along a very broken coast-line, its apex being formed by a sheet of water covering seven or eight square miles, which goes by the somewhat significant, if not very euphonic, title of Roaring Water Bay. Long Island Bay is bounded on the east by the islands of Clear and Sherkin, of which the author of the "Sack of Baltimore" has written—

"Old Innis Sherkin, that one looks like a moulting bird,  
And, in a calm, the ocean tide is heard."

Notwithstanding the immediate vicinity of Roaring Water Bay the poet's picture is true. All these ocean inlets can both sleep and roar. When cyclonic disturbances approach they roar, and during a spell of anticyclonic weather they sleep, in obedience to the gentler forces operating.



SKETCH MAP OF THE PROMONTORIES OF SOUTH-WEST IRELAND, SHOWING  
COAST-LINE AND POOR-LAW UNIONS.

This region of deeply indented land ends at the head of Roaring Water Bay, but round the extensive coast-line sketched there are numerous smaller creeks and bays, some of them of great natural beauty. On the north side of the Dingle peninsula are Brandon Bay and Smerwick Harbour. Ferriter's Cove occupies its western extremity. Ventry and Dingle Harbours

are on its southern shore. Valencia Harbour includes all the sea space between the island and the mainland, from its main entrance at Doulus Head to its second and lesser approach near Portmagee. This harbour is, therefore, irregularly semicircular in shape, deep, capacious, and safe, about seven miles long between its two entrances. St. Finan's Bay comes between Valencia and Ballinskelligs Bays. Derrynane Bay is beautifully situated between Hog's Head and Lamb Head. Sneem Harbour is on the north side of Kenmare Fiord, while Kilmakilloge, Ard-groom, Quoylach, and Ballydonegan Bays are all on its southern or eastern shore. Bear Haven, Adrigole Harbour and Glengariff Harbour, are offshoots from Bantry Bay. Barley Cove is the first creek east of Mizen Head. Crook Haven and Toormore Bay are on the mainland side of Long Island Bay. Roaring Water Bay forms the southern limit of the entire maritime district sketched, while Tralee Bay bounds it on the north. A straight line across from Dunmore Head to Mizen Head, that is, between the most westerly and southern points of Ireland, does not measure more than fifty-four or fifty-five miles, but the coast-line, if traced round between Tralee and Roaring Water Bays, will not fall much short, if anything, of four hundred miles, or about one-fifth of the whole coast-line of Ireland.

From the geographical features pointed to, it is easy to understand why the climate of south-west Ireland should be so extremely equable. This district enjoys, to an intensified degree, that same modifying influence of the sea on its climate which distinguishes British climates, as a whole, from Continental ones. No localities in the same latitude, even in England, can show that absence of extreme heat in summer and cold in winter which marks the local climatology of maritime Cork and Kerry. Not one, even, of those favoured spots on the English Channel which have attained celebrity as health resorts, and which lie in a more southerly latitude, can rival, for mildness in winter and equability the whole year round, this tract from Dingle to Cape Clear. Mountain and sea air, in constant motion, temper the excessive heats of summer ; and in winter, when the uplands of Devon are perhaps clad with snow, and when London lies buried in fog, these shores of south-west Ireland are soft and warm,

their atmosphere is always pure, and generally clear and sunny. Observations on sea-surface temperatures round the British Islands record, almost at every season of the year, higher temperatures in the south-west of Ireland than elsewhere. At the island of Valencia the sea-surface usually records  $56^{\circ}$  in May, rising to about  $62^{\circ}$  in August and September. Temperatures of from  $37^{\circ}$  to  $45^{\circ}$ , which are usual on the surface of the sea all along the eastern coast of Britain from the Thames to the Orkneys, are quite unknown in the fiords of Kerry. The reason is the more direct influence of the Gulf Stream. About the meridian of the Azores, a large mass of this ocean current flows almost due eastward to the north of Spain, enters the Bay of Biscay, and sweeps out again in a north-westerly course across to the coasts of Cork and Kerry, guided in this direction by the projecting coast of Brittany. The only part of England which derives much direct benefit from this current is the Land's End, which just comes within its influence, but the whole west of Ireland, Scotland, and Norway are warmed, not alone by this Bay of Biscay branch current, but by the full force of the main Gulf current, which passes in a north-easterly course from the meridian of the Azores. Perhaps the best key to the thermal influence of the Gulf stream upon the British Islands is got by studying isothermal curves of the globe, showing mean temperatures for the whole year, and also for the hottest and coldest months respectively, namely, July and January. If we examine the isothermal curve showing a mean temperature of  $50^{\circ}$  in the northern hemisphere throughout the whole year, we shall find it leaving the American continent at the north-eastern extremity of Nova Scotia, it then takes an E.N.E. course across the Atlantic, keeping just clear of the southern point of Newfoundland, it touches European land at the extreme north of Ireland, only, however, just skirting the coast; it now begins to take a perceptible inclination southward, clears Scotland altogether, crosses the Irish Sea, cuts across England from about Lancashire to the Wash, and passes onward through continental Europe and Asia to the head of the Caspian Sea. This isotherm shows that a mean annual temperature of  $50^{\circ}$  is enjoyed in the British Isles somewhat unequally. It shows practically (ignoring local

climates) that all Ireland is warmer than  $50^{\circ}$ , that all Scotland and a considerable part of the north of England are colder, that Wales and the south of England are like Ireland, warmer than  $50^{\circ}$  the whole year through. If we now take the isotherm of  $40^{\circ}$  showing mean temperature in midwinter, we shall find a very different curve. This leaves America south of Washington, it crosses the Atlantic in a nearly north-east direction, about  $30^{\circ}$  west longitude it reaches the latitude of north Ireland, it then curves due eastward, strikes land about Donegal, cuts across the north-eastern corner of Ireland with a curve inclining to the south, crosses the Irish Sea, cuts through Wales and England, which it leaves about Sussex, from which it takes a straight south-east course through France to northern Italy; it there curves more to the east, crossing the Adriatic Sea, thence through Turkey, skirting the south shore of the Black Sea to the Caspian, not far from its southern shore. This January isotherm shows that at least seven-eighths of Ireland has a mean temperature of over  $40^{\circ}$  during the coldest month of the year. It also, however, shows that not more than one-fourth or one-fifth part of Great Britain is similarly favoured. Turning now to the July isotherm of  $60^{\circ}$ , this line leaves America at the mouth of the St. Laurence, it skirts the whole southern coast of Newfoundland, and takes an easterly course with a slight southerly inclination until mid-ocean is reached; the curve then inclines to the north, but not sufficiently so to touch any part of Irish land; it clears Carnsore Point in Wexford, enters Great Britain at South Wales, crosses in a north-easterly direction to Lincolnshire, strikes through the North Sea to Christiania, pursues a north-easterly course through Sweden, until it rounds the extreme north of the Gulf of Bothnia. This curve shows that the only part of Great Britain having a midsummer mean temperature over  $60^{\circ}$  is that lying south and east of a line between Swansea and Hull. All Wales, the north of England, Scotland, and the whole of Ireland, have a mean summer temperature cooler than  $60^{\circ}$ . These curves are lines of mean temperature, and do not exclude special local temperature possibilities anywhere. A temperature of  $80^{\circ}$  is occasionally recorded in Dublin, but that does not affect the established fact that the mean summer temperature of Ireland is lower, and its

mean winter temperature higher than England, nor does it alter the fact that the mean temperature for the whole year is somewhat higher in Ireland than in Great Britain. Looking now to local climates in Ireland, as it owes whatever general equability it possesses over Great Britain to its geographical position, it should follow that the further south and the further west we go in Ireland, the more insular, and consequently the more genial, its climate should become. Applied to these peninsulas of Kerry and Cork this statement is true, although the central parts of Ireland are decidedly colder than its northern shores. The sea influence over the climate of Ireland manifests itself this way, that all round the coasts, north, south, east, and west, a higher mean temperature prevails than in the inland districts.

The mean temperature of the south-western promontories is  $52^{\circ}$ ; the whole west coast up to Mayo is  $51^{\circ}$ ; and this is also the mean of the south coast, from Wexford to Cork. The whole east coast, from Down to Wexford, has a mean temperature of  $50^{\circ}$ , and the north-east coast, from Belfast to Lough Swilly, has  $49^{\circ}$ . Inland places, at varying distances from the sea, have temperatures generally decreasing as we recede from the coast, until we get to the coldest region of Ireland, which comprises a long strip of country from Tyrone to the borders of Queen's County, including the greater portion of the counties of Cavan, Monaghan, Westmeath, and King's County. In these inland counties the mean annual temperature sinks to below  $47^{\circ}$ , and no better proof of the modifying influence of the sea on climate is there than the fact that the mean temperature at Tullamore is  $2^{\circ}$  lower than it is at the Giant's Causeway, which lies 130 miles further north. As statistical proof of the great salubrity of south-western Ireland will be introduced, it now becomes necessary to place a limit to the district landwards, in order that extent of territory, population, births, deaths, &c., may be accurately dealt with. The most convenient arrangement will be to take the entire region as conterminat with the combined six poor-law unions of Cahirciveen, Dingle, Kenmare, Bantry, Castletown and Skull. The three first mentioned belong to Kerry, the others to Cork. The coast-line sketched, as extending between Tralee and Roaring Water Bays, will be found to belong to one or other of



these six unions, with the exception of a few miles at the apex of Dingle Bay, where the unions of Tralee and Killarney each occupy a very small part of the coast-line. As both these unions extend inland to distances of about thirty miles from the sea, they have been excluded from consideration on account of the non-identity of their geographical and climatic conditions with the purely maritime region under discussion. Looking to the map it is seen that the poor-law union of Dingle includes the entire peninsula, except a small part of its isthmus, which belongs to Tralee. That large and broad mountainous promontory between Dingle Bay and Kenmare Bay, belongs chiefly to the union of Cahirciveen. Kenmare union includes all the country around the head of the fiord, and for some twenty miles down each shore. The promontory terminating at Dursey Island belongs to the Castletown union. Bantry union includes all the wild mountainous country round the head of the bay and on both sides. Glengariff belongs to the Bantry union. Skull takes in the whole of the promontory terminating at Mizen Head. The area covered by the six unions amounts to 758,444 acres, or 1,185 square miles. The three Kerry unions alone occupy 814 square miles, the three smaller Cork unions combined only 371 square miles. If the extent of the entire district covered by these promontories be brought into comparison with that of individual counties in Ireland, it will be found to be larger than twenty-three of them. A combined district, therefore, which is only exceeded in territorial extent by nine of the Irish counties, should be sufficiently large to deal with statistically, without the risk of fallacy entering to vitiate conclusions. At the census of 1891 the combined population of the six unions was 97,756, of which 59,194 were in Kerry, and 38,562 in Cork. Compared with the populations of individual Irish counties in 1891, this combined area exceeded the following thirteen in population—Carlow, Fermanagh, Kildare, Kilkenny, King's County, Leitrim, Longford, Louth, Meath, Monaghan, Queen's County, Westmeath and Wicklow. It stood, however, almost on a par with two others—Sligo and Waterford. On referring to the last three census enumerations, County Kerry had a population of 196,586 in 1871, 201,093 in 1881, and 179,136 in

1891. The slight increase of 2·3 per cent. in the population during the decade 1871-81 was changed into a decrease of nearly 11 per cent. during that of 1881-91. This was due to the much larger stream of emigration which prevailed during the latter period. Emigration from Kerry, though still going on sufficiently to lower the population slightly year by year, is not on the same scale it was during the earlier years of the decade 1881-91. Available figures for the six years 1887 to 1893, show a substantial and almost regular decrease, each succeeding year showing a smaller number of emigrants than the preceding. The only exception to this was the year 1891, when there was a trifling increase over 1890. The net reduction in the numbers of those who emigrated from Kerry from 1887 to 1893 was 1777, which is equal to an average yearly decrease of 296 persons. For the purpose of calculating death-rates with as near an approach to absolute accuracy as possible, the census figures of 1891 are hardly sufficient. The available figures before me, of births and deaths, are those of the Irish Registrar-General for the four quarters of the year 1896. I have, therefore, estimated the population of the combined district to the middle of the year 1896, and have based this estimation on the mean population of the twenty years embraced by the two intercensal periods of 1871-81 and 1881-91, in preference to the more usual method of taking the latter decade only. Estimated thus the united population of the six unions in the middle of 1896 would be 95,259, or 2,497 less than it was in April, 1891. The populations of the individual unions have been estimated on the same scale of reduction. Death-rates to be introduced are, therefore, based on the numbers computed to exist in the middle of 1896, not on the recorded populations of 1891. Before dealing with the vital statistics, I shall now give some figures relating to the meteorology of Valencia Island, which, with slight modifications, are fairly applicable to the whole of this maritime region. Valencia Island is separated from the mainland by a tortuous sea channel, varying in width from a furlong and a half to a mile and a half, the ferry at Knightstown being about half a mile across.

For a period of twenty years the barometrical pressure at sea-level reached its mean monthly maximum in June, and its

minimum in April. The range shows a total amplitude of 0·123 in., from 29·973 in. in June to 29·850 in. in April. The absolute extremes showed a difference of 2·870 in., from 30·940 in. on January 14, 1891 to 28·070 in. on January 15, 1871. The monthly range during twenty-three years was found to be highest in January, 2·870 in., and lowest in July, 1·425 in. The mercury has never fallen below 29 in. in either June or July during the whole period. Temperature being the chief factor determining climatic character, this deserves close study. For the twenty-three years 1869-91, the mean annual temperature of Valencia was 51°. The highest mean annual temperature recorded was 52·3° in 1869, and for eleven other years out of the twenty-three it stood between 51° and 52°. The warmest month is August, which showed a mean of 59·2° for the whole twenty-three years. The coldest month is December which, for the same lengthened period, showed a mean of 45°. Throughout the four months of winter the total change of mean monthly temperature does not exceed 0·6°. The sea-surface is coldest in February, warmest in August. The air, although warmest in August, is colder in December and January than in February. The range of mean annual temperature for twenty consecutive years was found to be only 2·6°. The uniformity of the mean temperature of Valencia is also very well demonstrated by the monthly mean values. In twenty-three years 60° for August has only been exceeded eight times. During the same long period the mean has only fallen twice below 40°—in January, 1881, and December, 1878. A temperature of 80° was only attained on three occasions in twenty-three years, namely, on August 7, 1869; July 22, 1878; and June 19, 1887. Perhaps the best proof of the extreme equability of the Valencia climate is found in the small variability of its diurnal temperatures. This range of variability is highest in December, 2·7°, and lowest in July, 1·3°, the whole year averaging only 1·9°. The only other British meteorological station comparable with Valencia in this matter of equability of temperature is Falmouth, but the English station has more frosty days than the Irish one. The relative humidity of the atmosphere at Valencia is high, the whole year mean for twenty-three years showing 83 per cent. This also is very equally distributed between the various months, January

and February showing highest, each with 85 per cent. ; May lowest with 79 per cent. The rainfall averaged 57·74 in. for twenty-three years. This shows highest in January with 6·50 in. ; lowest in May with 3·36 in. Snow very rarely falls in Valencia. During the ten years 1871-80, there was no loss of hourly measurements of rainfall owing to snow. The number of days on which some rain falls (·005 in.) during the year averages 246, January and December contributing the most rainy days and June the fewest. Fogs are so rare as to be almost phenomenal, and sunshine stands extremely well. For the ten years 1881-90, the mean annual amount of sunshine at Valencia was 1486·5 hours, or 33·8 per cent. of the total amount possible. The highest percentage amount of sunshine is in May, 43·3 per cent. The foregoing figures have been abstracted, by kind permission, from a valuable paper on the "Climatology of Valencia," by J. E. Cullum, Esq., Fellow of the Royal Meteorological Society, of the Meteorological Observatory, Valencia, published in the *Quarterly Journal of the Royal Meteorological Society* for October, 1896. They fully warrant us in arriving at the conclusion that this island enjoys the most equable of climates from day to day, month to month, and year to year. In summer it is always cool—the August days, even, are never oppressively warm. In winter no spot in the British Islands is milder, none more salubrious. The harsh east winds of spring, so serious an element in the British climate, and not unknown in the eastern and north-eastern parts of Ireland, are here robbed of all their sting. In their passage across the Irish sea these harsh breezes become considerably softened, and before reaching this far westerly spot their place is taken by warm winds from the south-west, which blow more or less the whole year through.

If we now compare this maritime district of Kerry and Cork with those fashionable health resorts on the south coast of England which have won reputation, we shall not find one of their local climates to equal this Irish one in the matter of equability. It is capable of proof by official statistics that Valencia Island, the whole winter through, has no equal on the English Channel. In the month of November it records a higher mean temperature than Penzance, Ventnor, Bournemouth,

Eastbourne, Brighton, Hastings or Ramsgate. In December it beats Guernsey and all the others named. In January it is on a level with Guernsey, and continues to maintain a clear superiority over the rest, Penzance alone excepted. In February the mean temperature at Valencia is higher than that at Torquay, Penzance, Guernsey, and all the rest. In March it surpasses Penzance, Guernsey, and all the others, Torquay only excepted. Taking the mean of these five winter months, the temperature at Valencia stands on a level with Penzance, and is higher than that of Guernsey, Barnstaple, Ventnor, Bournemouth, Eastbourne, Brighton, Hastings, or Ramsgate. The question will now naturally arise, if Valencia Island and these Irish promontories enjoy a climate so super-excellent, how is it that health resorts have not sprung into celebrity all round these favoured creeks and fiords. This query can be answered only one way—these promontories are as yet *terra incognita* to the ordinary British health-seeker, their meteorological and climatological features are not understood, and those magnificent arms of the ocean which wash them, though within twenty-four hours' reach from London, are unexplored except by the rushing tourist, whose engagements will not permit him to stay to investigate at leisure those scenic pictures which, in rapid succession, rivet his gaze as he whirls along by coach or rail. Those who have sojourned at Glengarriff, or who have sailed into the Kenmare Fiord up to the picturesque little town of the same name, resting here and there to explore Derrynane, Parknasilla, Derreen, and the mountain wilderness around Kilmakilloge, will appreciate the point of this remark. But these are not the only beauty-spots in this district of delightful landscape, of glorious seascape, and of gorgeous sunset. Who that has found shelter from the fury of the Atlantic at Bear Haven, or inside the safe harbour of Valencia, with Glanleam and Beginish Island on either side, or who that has seen the salmon leap on Lough Currane, or stayed to rest at sweet Glenbeigh or Caragh Lake, or crossed Dingle's wide Bay to gather rare ferns and alpine plants from Connor Hill or Mount Brandon, that will not bear testimony to the profusion of oases with which the whole region abounds.

Before concluding I shall have something to say regarding

the relative merits of some of these spots as health resorts, but meanwhile let inquiry be made into the vital statistics of this large maritime district, to see how these compare with those of other districts in Ireland, and also with those of some of the most favoured localities on the English Channel. The figures have been abstracted and compiled from the four quarterly returns of the Irish Registrar-General for 1896; and the annual report of the Registrar-General for England for 1895, his 1896 report not being yet available. It has been pointed out that the promontories, as conterminate with the six unions, exceed twenty-three individual Irish counties in territorial extent, and thirteen in population. It should now be mentioned that the whole region is a poor one, its valuation for poor-law purposes in 1893 having been only £115,864. The occupations of the people are farming and fishing. The towns situated in the area are all small, five only having populations exceeding 1,000—Dingle, Cahirciveen, Kenmare, Bantry, and Castletown, which are respectively the centres of their several unions. The collective general death-rate of the area in 1896 was 11·3 per 1,000 of the estimated population. If we now look to the death-rates of the Irish Counties in the same year, we are met with the fact that not one of the thirty-two shows so low a rate, the nearest approach being found in Mayo 11·6, Leitrim 11·8, and Roscommon 12·5. The general death-rate for the whole county of Kerry was 12·4, thus showing the maritime strip to have a lower mortality than the other parts of the county which trend inland. The death-rate for the whole county of Cork was 16·2. Some discount should here be allowed for urban influences, but making every reasonable reduction the three unions of Bantry, Castletown, and Skull show to remarkable advantage, with death-rates of 11·1, 10·9, and 11·0 per 1,000 of their respective populations. It is absurd to suppose that this difference of death-rate between these three unions and the county in which they are situated can be entirely due to urban influence. It is much more reasonable, on the other hand, to attribute the salubrity of Bantry, Castletown, and Skull to their climatic advantages. Let us now look to the death-rates which prevailed in 1895 in those maritime counties on the English Channel from Cornwall to Kent, which contain

nearly all the celebrated health-resorts in the kingdom—Falmouth, Torquay, Bournemouth, Ventnor, Brighton, Eastbourne, and Ramsgate. The general death-rate in Cornwall was 19·3, in Devon 17·8, in Dorset 16·3, in Hants 16·5, in Sussex 15·8, and in Kent 15·7, per 1,000 of their respective populations. The average death-rate in these six counties, with their advanced sanitation and climatic advantages, was 16·9. It may be a somewhat startling statement to make, but it is nevertheless true, that all along the south of England, from Land's End to the mouth of the Thames, people die at exactly one and a half times the rate they do all along the tract in south-west Ireland, from Tralee Bay to Cape Clear. Let us proceed a little further to see if we can elucidate this enormous difference in the two mortalities.

If we take up Cornwall alone, as having the highest death-rate of these English Channel counties, we find that county to show a death-rate 70 per cent. beyond that which prevails in the corresponding geographical region in Ireland. It is no answer to this to say that a comparison between Cornish tin-miners and Irish fishermen is unfair, tin-mining being known as the most unhealthy of occupations, and fishing as perhaps the most healthy. The best way to dispose of this argument is to find out how the female population of Cornwall die, who, of course, do not work in these unhealthy mines. Well, females died in Cornwall during 1895 at the rate of 18·6 per 1,000 of the female population living, the male rate alone being 20·1. It is here clear that Cornwall, compared with maritime Kerry, is an exceedingly unhealthy region. I shall now anticipate a further possible objective argument that it is unfair, and may lead to a fallacious inference, to bring into statistical comparison a thinly populated seaboard tract in the south-west of Ireland with English counties containing such centres of population as Portsmouth, Brighton, and Plymouth. To meet this let us see what the difference is, in England itself, between the urban and the rural death-rates. Over the whole of England and Wales in 1895, the urban death-rate was equal to 19·5 per 1,000, and the rural to 17·0 per 1,000 of their respective populations, a difference of 2·5 only per 1,000 in favour of rural salubrity. Now the death-rate in Portsmouth was 19·7, in Brighton 20·4, and in Plymouth 21·6. Keeping in

view these urban death-rates, and also bearing in mind the fact that the rural population greatly exceeds the urban over all these southern counties of England, how can we reasonably saddle urban communities with the whole onus or stigma of high mortality, when we find the counties in which they are situated showing excessive death-rates? To deal in the fairest manner possible by England, let me take Dorsetshire for comparison with Kerry and Cork. Dorsetshire is a maritime county, having a favourable geographical situation between Devon and the Isle of Wight. It is also a thinly populated county, where the people are mostly employed in agriculture. Its largest town, Weymouth, contains only 14,000 inhabitants, and its capital, Dorchester, only some 8,000. The population of Dorsetshire is 190,373, or, as nearly as possible, double that of the Irish region with which it is to be compared. Its area is 627,265 acres, or 980 square miles. The density is 194 persons to the square mile, which, for an English county, is a low density. Dorset is also by far the most thinly peopled of these English Channel counties, though not so thinly peopled as the Irish district, which gives 80 persons only to the square mile. The difference is not material in a sanitary sense, both localities being so purely rural. If anything like over-crowding comes into play it should be in the Irish district, where house accommodation is so much more primitive than in Dorsetshire, where comparative comfort abounds. Now what reasonable explanation of the fact can be given, the hard statistical fact, that people in Dorsetshire die at the rate of 16.3 per 1,000, when they only die at the rate of 11.3 in the promontories of Kerry? Dorset has a genial climate, a scattered agricultural population, is comparatively speaking free from poverty, has no huge manufacturing or industrial hives within its borders, is not different from the rest of England or Ireland in the age-distribution of its population, and is not behind but probably far in advance of south-west Ireland in the matter of applied sanitation. In the absence of any other satisfactory explanation, we are driven to seek a reason in the different meteorological and climatological conditions of the two regions. The combination of mountain and open ocean air is absent from Dorset, the extreme equability of climate the year



through is lacking, the remarkably small daily, monthly, and yearly variability of heat is not found, the Irish air is better washed by more frequent and copious showers, and thus rendered more free from microbial life and suspended impurities of all kinds, than the air of Dorset is, and there is more ozone on the fringe of the Atlantic than in the English Channel.

Let us now see how zymotic deaths show in the promontories of south-west Ireland. During 1896, 48 deaths were caused by zymotic disease, which is equal to a rate of 0.5 per 1,000 of the population. In 1895, 159 deaths occurred in Dorsetshire from zymotic disease, which is equivalent to a rate of 0.83, a low rate certainly, but also no less than 66 per cent. above the rate prevalent on the seaboard of Kerry. If we analyse the zymotic cases, we find that no deaths from small-pox were recorded in either locality. Measles gave 4 deaths in the Irish district, 16 in Dorsetshire. Typhus fever caused 4 deaths in the Irish district, none in Dorset. This points to better sanitary provisions in the English county, and most likely to larger and better house accommodation. Whooping-cough caused 20 deaths in the Irish district, and 18 in Dorset. On examination of the several unions, it is found that these 20 deaths from whooping-cough were confined to Cork county, Skull contributing 12, Castletown 7, and Bantry 1. The larger Kerry part was entirely free from whooping-cough. Diphtheria gave 2 deaths only in the Irish district, but 40 in Dorset. Both these deaths occurred in the union of Kenmare, all the other five unions having been free from this disease. It is commonly supposed that diphtheria is favoured by bleak and exposed situations, yet the promontories of south-west Ireland compare most favourably with Dorsetshire in respect of this disease. Scarlet fever caused 1 death only, and that in the Bantry union, but 7 deaths resulted from this disease in Dorset. Simple continued fever caused 6 deaths in the promontories, none in Dorset. Here again we can see evidence of better sanitation in the English county—enteric fever shows 5 against 20 deaths. This disease is generally considered a fair test of sanitation. I am disposed, however, to regard this Irish region as naturally well protected against this disease, otherwise, in the absence of applied sanitation, it should

show a far higher mortality. Diarrhoea caused 6 deaths in the Irish district against 58 in Dorsetshire. This I should ascribe to the greater intensity of heat in the English county during the months of July and August, but largely also to urban influences. To put the zymotic death-rate of Kerry at its true estimation, it is safe to say that its lowness is due, not to the application of sanitary science, but to a sanitary climate. Let us now turn to the infantile mortality. This is understood to mean the rate at which children under one year of age die to every thousand children born, and is expressed as so many deaths per thousand births. Over the whole Irish area sketched the rate was 62 per 1,000 births. The rate in Dorset was 102, and be it here noted that child life is absolutely safer in Dorsetshire than elsewhere throughout the length and breadth of England. The most dangerous county in England for infants is Lancashire, where infant mortality shows the very serious figure of 193. The rate in Cornwall (153) is comparatively excessive. Children under one year of age die in Devon at the rate of 129 per 1,000 births, in Hants at 132, in Sussex at 121, and in Kent at 134. The causes determining infantile mortality are not identical with those which influence the general death-rate; but broadly it may be said that the former rate is determined by unfavourable social surroundings and by urbanisation, and the latter by sanitary conditions, nature of occupation, &c. Climatic conditions control both rates, more or less. The mortality figure for infants throughout the whole county of Kerry is 69, but in the adjoining county of Cork it amounts to 94. The difference is due to the greater influence of urbanisation in the latter county, which always affects the infantile to a greater degree than the general death-rate. Both these county infantile death-rates, however, show this—as we remove from the fringe of the ocean in south-west Ireland child life becomes distinctly less secure. Looking to the extreme lowness of all the death-rates, general, zymotic, and infantile, it is impossible to dissociate these from the reason why, and the conclusion forces itself that conditions favourable to health are normally present to a pre-eminent degree over the whole region of these promontories. Sanitary science has not progressed with the same rapid strides in Ireland

as in England—in the remoter districts applied sanitation, in its accepted English sense, cannot be said to exist. A visit to Dingle, Cahirciveen, or Bantry, does not reveal any visible extravagance by their several sanitary authorities, yet these places are healthy. If the sites upon which these small towns are pitched had been only on the English channel, long since would they have rivalled Bournemouth or Torquay as fashionable health resorts. Their most bountiful protector is the Atlantic ocean, whose condensed vapours wash their streets, and whose pure, genial, aerial currents flush their dwellings, rapidly oxidising all impurities.

While these small towns enjoy marked freedom from zymotic disease, and have death-rates remarkably low when compared with others in Ireland not so favourably situated, it should be remembered that all the death-rates of the promontories—general, zymotic and infantile—would show to still better advantage were these little towns excluded from consideration. This remark, however, must not apply to the prettily situated little town of Kenmare, with its wide and clean main thoroughfare, nor to such villages as Waterville and Knightstown, which commend themselves on inspection, in all of which first-class hotel and private accommodation can be secured. There is yet another proof of the great salubrity of these Irish promontories to offer, namely, the large proportion of the population who die at very advanced ages. One death was registered at the age of 100 years in 1896, and several at 90 upwards. The Irish Registrar-General, in his returns, gives the numbers who die at the age of 60 years and upwards. The proportion of these deaths to total deaths over the area of the region I am dealing with shows the high percentage figure of 47. If we take all Ireland into comparison we shall find that 40 per cent. only of all deaths are of persons aged 60 years and upwards. If we examine the large urban districts in the same respect we shall find a much more material reduction in the percentage of these aged deaths—thus, in the city of Dublin deaths over 60 constitute only 24 per cent. of deaths at all ages.

Statistical proof—I trust solid and clear—has now been given that the whole coast-line from Dingle to Cape Clear is one of extraordinary salubrity, all its death-rates sinking well

below that of any other Irish locality, and strikingly below those of the six south-coast counties of England. It has been pointed out, and proved by meteorological figures from an official source, that the choicest health-resorts of England must yield the palm to Valencia in the matter of mean temperature throughout the winter, and no one will dispute the superiority of Valencia over Torquay, Bournemouth, or Ventnor, the whole year through in the matter of climatic equability. Thousands of patients throughout Great Britain suffering from tubercular disease of the lungs in its various stages, and from bronchitic, asthmatic, rheumatic, and other affections, rush, at the approach of winter, to the various health-resorts on the English Channel, and change their quarters from place to place according as this health-resort or that other is supposed to be the more sheltered, or is credited with some other advantage. Again, not a few fly from England altogether to winter at the base of the Pyrenees, or at some celebrated spot on the Gulf of Lyons or of Genoa, the object being to reach some genial climate not to be found within the limits of the British Islands. To those sufferers who annually hie away to Bournemouth, Ventnor, or Torquay, I would suggest—why not try the Irish fiords for a change?

At Glengariff mountain spurs afford complete protection from every cold wind that can possibly blow. On the east, north, and north-west there is perfect shelter. It is open only to the south wind, which is always warm. While this very complete shelter renders Glengariff an incomparable winter and spring resort, it has the disadvantage of making it too relaxing in summer and autumn for many cases. Parknasilla is less known than Glengariff, but it also is a charming spot, and exceedingly well sheltered from every cold point. Valencia differs from either of these places by being more open. During winter and spring it is not so suitable for advanced cases of phthisis, but during the summer and autumn months it is preferable. There is more free play of mountain and sea air all through the year at Valencia than at Glengariff, and hence, while equally mild, it is more bracing, more invigorating, and distinctly preferable from May to December for incipient lung disease. What patients in the early stages of pulmonary disease should avoid most is a stagnant

atmosphere, and if it comes to a question of residence in the warm months of the year between a too well-sheltered glen and an open locality with equally high mean temperature and equally small daily variations of heat, the latter should be chosen. The summer lingers long in south-west Ireland, and November is usually a pleasant month. When December arrives, however, Glengariff should be selected in preference to Valencia for all advanced cases. Many patients might advantageously spend the year between the two places, leaving Glengariff for Valencia in April or May, returning to Glengariff in December. To many of those patients who leave the shores of England for continental health-resorts at the approach of winter, it might be useful to know that scientific investigations into the causation of tubercular lung disease make it abundantly clear that people do not contract it by "catching cold," but by inhaling infection. Impure atmospheres, low temperatures, and sudden variations of temperature being all highly prejudicial, it stands to reason that the most suitable air a phthisical patient can breathe should be one of the highest absolute purity, of high mean temperature, and with the smallest possible variations from day to day. Montpelier, Pau, Mentone, Cannes, San Remo, and the Riviera generally, yield more sunshine than can be found in Britain, but on the Gulf of Lyons or of Genoa the air is not more free from suspended impurities—organic and inorganic—nor is the mean temperature higher, nor are the daily variations less than on the coast of Kerry. Why, therefore, should southern France or northern Italy supersede south-western Ireland in the treatment of pulmonary diseases? It is sometimes charged to south-west Ireland that its rainfall exceeds that of most other places in the British Islands, and that therefore it is objectionable as a residential locality for those having a tendency to lung disease. That the rainfall is above the average is not denied, but that this is prejudicial, where lung disease threatens to develop, is most distinctly contradicted. The rainfall at Valencia has been seen to average 57·7 in. annually, but this is not the wettest of British climates by any means. The west of Scotland, the Lake district of England, and several parts of Wales record over 80 in.; particular spots show still higher, Seathwaite averaging 140 in.

Cornwall and Devon give 40 to 60 in., and all the south-coast counties of England 30 to 40 inches. In the month of November, Guernsey and Valencia are equal in the matter of rainfall, each showing 5·5 in., and in December it may surprise some to know that rainfall at Penzance is actually higher than at Valencia, the falls being respectively 6·14 and 6·02 in. It has been established beyond all controversy in Ireland, that where rainfall is heaviest lung disease is least. The county of Kerry is exceptionally free from tubercular disease of the lungs, and its marked exemption has been proved by the highest statistical authority, the Registrar-General for Ireland. If we want a reason for this exemption, we have it in the dust-free atmosphere and in the equable climate. Conversely, the highest amount of tuberculous disease in Ireland is found where rainfall is least. During a medical practice in Valencia of six years, the writer has met five cases only of tubercular lung disease. Three were not natives, the fourth contracted the disease by direct infection, the precise origin of the fifth is not evident. The only rational explanation of the marked freedom of the district from lung disease is the great purity of its atmosphere, a purity which is constantly maintained by the regularity with which all floating particles—organic and inorganic—are carried down to the earth by the beneficent rainfall. To walk out into the clear, germ-free atmosphere of Valencia after one of its sun-showers, inhaling air freshly washed, is a luxury for the healthy—a boon for the asthmatic, the bronchitic, and the phthisical.

Owing to a good natural fall, the rain finds its way immediately to the sea, and roads thus get into fair condition for walking or driving very soon after heavy showers. Tubercular phthisis is not the only diseased state for which the climate of south-west Ireland is eminently suitable, but space forbids me entering upon so wide a subject as the discussion of all the morbid conditions likely to be benefited. Whenever medical advisers order a moist, pure, sea-side air, of high mean temperature, equable, and free from sudden daily or seasonal variations, patients will find these requirements all round the fiords of south-west Ireland. Those who, from overwork, worry, or brain-fag, require rest, or from the depressing and debilitating effects of

some acute or prolonged illness want rapid recuperation, would do well to try what a brief stay at Valencia, Glengariff, or Parknasilla, could do for them. Where purely tonic treatment is required in debilitated states of the system, Valencia stands out *facile princeps* as an invigorating spot at all seasons of the year, and for incipient phthisis it has no rival. When lung disease is advanced, and where great protection is required against the least harshness of wind, especially in the months from January to April, Glengariff and Parknasilla both offer some advantages. Their Royal Highnesses the Duke and Duchess of York have just visited the island of Valencia, happily, however, not as invalids. Their reception by the inhabitants was a loyal one. Let us hope that the inscription "Come back to Erin," which met the royal eyes at departure may be responded to, and may the inclusion of Valencia amongst the few spots in Ireland visited by their Royal Highnesses lead others to make acquaintance with this soft, green isle of the west, which, by sub-marine transatlantic cable, links the old world with the new.

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## ON THE EXTERNAL TREATMENT OF SYPHILIS.<sup>1</sup>

BY E. SOLLY, M.D., HARROGATE.

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SOME months ago, when at the request of our Secretary, Dr. Sunderland, I was putting together some notes upon Harrogate as a health resort, I remarked that I thought it was a pity that the facilities there afforded for a thorough treatment of syphilis were not more generally known and made use of; and it was at Dr. Sunderland's suggestion that I agreed to draw up a short note upon the subject. What is known as the Aachen (Aix-la-Chapelle) treatment of syphilis by means of the external use of mercury in combination with sulphur baths and waters is, and has been carried out for many years, at Harrogate, and indeed

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<sup>1</sup> Paper read before the Balneological Society, December 10, 1897.

the sulphur waters of Harrogate are eminently suited for the purpose.

I do not propose to enter at any length upon a discussion of the relative advantages of the Aachen treatment over other methods; the subject of the treatment of syphilis, and especially the respective merits of internal and external methods of administering mercury, have been so recently discussed by eminent specialists at the meeting of the British Medical Association, and the paper by Dr. Shaw Mackenzie which has preceded mine this evening has dealt so fully with the external methods, that I feel I need not go into the question myself beyond uttering the passing comment that where the views of authorities differ so widely, one cannot but feel that in the words of Sir Roger de Coverley, "There is much to be said on both sides." Nor, on the other hand, do I propose to draw invidious comparisons between the advantages offered by the various health resorts in the special treatment of syphilis.

On the only occasion on which I have spoken at a meeting of this Society, I said that I considered it a mistake for a medical man practising at any particular health resort to crack up the merits of that health resort as being superior to all others in every point, and I will at least try now to act up to my expressed opinions, and I am of opinion that provided the authorities at each place set to work to make the best of their natural advantages, the general public will soon find out the relative values of the different resorts. Living as I do at Harrogate, I know of and could speak of our natural advantages at considerable length if time permitted, but I will say no more than that Nature has lavished her bounty upon the place with a liberal hand: first, in matters of climate; second, in regard to the number, qualities, and especially the variety of the mineral waters; and thirdly, in scenery of the surrounding country; and I may add that I think the local authorities have done, and are doing, their very best to develop and make use of these natural advantages.

My object to-night, then, is not to prove that Harrogate is necessarily a better place than Aachen (Aix-la-Chapelle) or other places for the treatment of syphilis, but rather to bring it before your notice that what is known as the Aachen treatment is and has



been for some years efficiently carried out at Harrogate. Many patients will always prefer to go abroad, and would continue to do so even though convinced that, *quâ* treatment alone, they could do better at home. The English are a travel-bitten race, and any excuse for a trip to a foreign country is acceptable to many. But where, as frequently happens, circumstances combine to prevent the invalid from being able to make the necessary journey, English health resorts get a chance even with these.

The special advantages to which Harrogate may lay claim are : (1) The sulphur waters, containing various amounts of saline matters (chiefly chloride of sodium), with sulphur mainly in alkaline combination, as sulphides or sulph-hydrates. Some of these, administered internally, are excellent aids to the elimination of the syphilitic poison from the body ; and others, used for bathing purposes, are particularly helpful in preparing the skin for inunction with mercury, and especially where syphilides are present. (2) The chalybeate waters, varying both in general salinity and in amount of iron present. These are excellent tonic alteratives, and are useful in certain cases, especially where debility and anæmia are associated with syphilis. (3) The climate, clear and bracing, and resembling that of mountainous districts more than might be expected, owing to its merely moderate height above sea level (350 to 450 feet), and there is no doubt whatever that mercury is always better tolerated in hilly districts, and one of my most striking cases is one of syphilitic rupia, in which the mercury had been administered freely for some weeks before, the destructive process had been steadily going on and the patient becoming more and more anæmic. When she came under my care I at once started her taking the sulphur waters in doses just sufficient to be mildly aperient, ordered sulphur baths, and continued the mercury practically without altering the dose. The waters and baths being both taken early in the morning, the patient was advised to spend as much of the day as possible out in the open air on the Harlow Moor, and began to respond to treatment at once. She was soon apparently quite well, but some symptoms reappeared after six months, when she came again for treatment. She again got rid of all symptoms, and has, I believe, remained well since and

given birth to a child, which shows no sign of disease yet. (4) It should be mentioned that we have attendants well trained and having many years' experience in carrying out inunctions, and a suite of baths, with all that is required in the way of waiting-rooms, winter garden, &c., such that patients can be put through the treatment practically at any time of the year—an obvious advantage over some of the foreign health resorts, which are only available for a certain part of the year.

A fifth advantage, and certainly worthy of mention, is that whereas at Aachen the syphilis cure is the main speciality of the place—so much so that the mere fact that a man has gone there for treatment is practically taken by the public as a diagnosis of syphilis—the same drawback does not, and never can, apply to Harrogate; the number and variety of complaints for which treatment is provided there is so large that syphilis as one of them is simply lost in the crowd.

Dr. Myrtle, in his work on the Harrogate waters, states that as the result of a visit to Aachen he considered that the great secret of the success obtained there lies in the thoroughness, the regularity, and the absolute control over the patients with which the doctor and his attendants set about their work. "There is nothing in the baths or waters to account for the success; there is everything in the combination of these with the systematic and scientific inunctions, fumigations and hypodermic injections of mercurial preparations. . . . The waters (sulphur) at Aix are exceedingly mild, they contain about the same active ingredients as the hospital mild sulphur (magnesia) well, and are very much inferior as therapeutic agents to our sulphur springs, whether taken internally or as baths; and as for climate, I found Aix the most depressing, smoky, filthy health resort one could imagine; the air and surroundings being the very opposite to that which makes Harrogate so singularly attractive and restorative." Dr. Myrtle also points out that the treatment can be carried out as well during the winter as in the summer.

Dr. Oliver in his work on "Pulse Gauging," believes that the value of mercury, especially in the secondary and tertiary stages, is to a great extent due to its power of restoring the natural elasticity of the arterioles, or rather their responsiveness to vaso-

motor influences. He points out that a gradual tendency to cicatricial contraction may remain after the elimination of the actual syphilitic virus—a view which is supported by many analogies; and the reference to this idea brings me back to the question of the influence of baths and waters as part of the cure in regard to syphilitic and post-syphilitic lesions. No one disputes the value of mercury, we may call it the “direct antidote” if we like, but what is, I think, not sufficiently known is the value of sulphur saline waters, such as those of Harrogate, as adjuncts to the mercurial treatment; this value being, I believe, due quite as much to their effects on the general vascular tone as their power of aiding the eliminatory action of the skin. Everyone who has any experience of the uses of baths and waters in the treatment of gout and “rheumatoid” conditions knows that the effect on the vascular tension is one of the chief indications of the results to be expected, and though I confess I am not a very enthusiastic believer in the value of examining the pulse by even the most delicate machinery yet devised, I am strongly impressed with the importance of watching the variations in the quality of the pulse during a course of treatment. The same agencies which we employ so successfully in restoring a healthy tone to the arterioles in gout may naturally be relied upon to do good in all diseases where a fibrous or cicatricial condition is present, and I may add that I often find that small doses of mercury are an excellent adjunct to sulphur waters, even in non-syphilitic cases.

With regard to the technique of the treatment, my own practice in ordinary cases has been to prescribe a daily inunction commencing with about 15 to 20 grains of ung. hydrargyri (diluted with two parts vaseline to one part of ung. hydrarg.), the dose being gradually increased if well borne. The patient goes down to the Pump Room about one hour before breakfast and drinks a glass of the waters (sulphur usually, but in debilitated cases the so-called Kissengen water, a saline chalybeate, is occasionally useful). After about ten minutes' stroll he takes another glass, and then goes to the Baths, takes a sulphur bath for about ten minutes, then a needle bath for three minutes, at first hot, but gradually cooled to about 85°F. or 90°F. Then he

lies on a couch packed in hot towels, during which process the attendant applies the ointment, taking a different part of the body every day. After about fifteen minutes the patient is allowed to dress and go home for breakfast, and except for taking a glass of one of the mild waters once or twice during the day, he is free to follow his own devices.

Three to six weeks may be taken as the duration of a course, and the amount of ointment used and the number of inunctions must be regulated according to the necessities of the case.

With regard to the use of a second or third course of treatment at six-monthly or yearly intervals, we can readily understand the advantage of these if a cicatricial condition has anything to do with the pathology of many syphilitic lesions, as I think it has, though the subsequent courses need not be so long or so severe.

In conclusion, I would remark that my object to-night has been mainly to tell all who approve of inunction treatment, especially when combined with bath and water treatment according to the Aachen method, that unless their patients or they have some special reason for going abroad, they can get all they want at Harrogate, and the patient, by going there for treatment, will avoid the stigma of a practical publication of his disease.

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## Editorials and Notes.

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### THE YEAR'S OUTLOOK.

IT is a long established custom of English Journalism to mark the closing of the year by a "general retrospect" of the most important matters that have occupied attention during the previous twelve months. The quarterly nature of this Journal, issuing as it does in January, April, July and October, renders such a retrospect in the last named month inappropriate. We therefore think it more fitting, on the present occasion, to occupy ourselves in a prospective outlook, rather than a retrospective *résumé* of the past. In doing this we shall have to address a few words to our readers upon the prospects of the year on which we have just entered in relation to the work of our Society, and the progress of those branches of medical science with which we are specially associated. The kindred subjects of balneology and climatology are so nearly allied to one another that it has seemed impossible to dissociate them. This is readily understood, when it is considered at how many points the work of the balneologist and that of the climatologist overlap each other.

There could never have been any doubt, that the establishment of the *British Balneological and Climatological Society* would have the effect of giving a stimulus to the study and practice of these two subjects. Since it was founded the Society has shown ample evidence of its powers for usefulness in many and divers ways. Not the least important instance of this evidence was the decision of the Council to publish a quarterly journal, which should not only serve as the representative organ of the Society, but might form a literary mouthpiece of everything pertaining to the science and practice of balneology and climatology. The success, which has so far attended this venture, has been very encouraging, and with the continued co-operation of members of the Society and others, the Journal ought to attain a permanent and influential position in medical journalism. To secure this end, we would earnestly impress upon the members

of the Society the opportunities offered by the Journal for the publication of articles of a suitable character. This is deserving of special appreciation by those members, who, from distance or other causes are unable to attend the central meetings and discussions of the Society. Contributions from such gentlemen will always be welcomed and receive careful consideration.

The meetings of the Society have been so well attended during the past year, the papers read of such special merit, and the discussions so interesting and well-sustained as to lead to the expectation of continued success in this department of its work. The choice of the rooms of the Royal Medical and Chirurgical Society for the meetings has given general satisfaction, and it is hoped will further tend to its prosperity. With the Journal well established, with fixed central head-quarters, with a large and representative Council and a growing membership, the British Balneological and Climatological Society is in possession of machinery, which, if fully used, and wisely directed, is capable of effecting much good work.

We will not attempt in this article to indicate all the numerous opportunities of usefulness awaiting the energies of such an organisation, and must content ourselves with the mention of only one or two.

In the first place the Society ought to foster not only private investigation and research in the subjects of balneology and climatology, but it might with advantage organise collective investigations and enquiries into numerous matters of a theoretical and practical nature in which members are more or less interested. In balneo-therapeutics as well as medical climatology there are many problems awaiting solution, and no Society at present existing is more entitled and better qualified to engage in such work. Nor are the questions of a more practical nature, less worthy of attention. Some of these, such as travelling facilities to health resorts, the establishment of chairs for the teaching of medical climatology and geography, have already received attention. Amongst others still waiting to be dealt with, may be mentioned such questions as the best means for promoting a higher professional status of health resorts practitioners and of dealing with objectionable methods of practice ;

the sanitary condition and public health administration of British resorts ; the growing evils and abuses connected with massage and other treatment administered by unqualified persons, and the question of a more uniform scale of medical fees.

Is it too much to expect during the coming year that in addition to ordinary discussion the Society may see its way to the appointment of committees to investigate and report upon some of the more pressing questions referred to ? We are fully alive to the difficulties of constituting committees of men residing in wide and distant parts of the country, but we think that this might be got over in large measure by the adoption of a system of correspondence between the several members of a committee for the comparison of observations, results, and suggestions by which much really useful work could be carried on without the necessity of meeting for closer and more thorough discussion until the investigations have arrived very near the stage when the possibility of a report of the committee appears likely. The suggestion is well worth consideration, and if put on trial during the present year may prove useful in furthering those objects of the Society which all will agree in hoping the end of 1898 may see well advanced.

#### THE TEACHING OF MEDICAL CLIMATOLOGY AND GEOGRAPHY.

As will be seen in another part of this issue, a proposal was made in a paper read at the meeting of the Balneological Society, on October 27th, 1897, that the subjects of medical climatology and medical geography should be made essential parts of the student's curriculum of education for the medical profession. The author pointed out the prominent position which these subjects held in the early days of medical science, and that, although they had been thrust into the background during later times, they had in recent years become recognised as very important branches of medical science. It was contended that the time had arrived when the medical examining boards should recognise this revival by making these two subjects compulsory parts of medical education. For this purpose he urged the establishment of chairs of medical climatology and medical geography at the several medical schools from which courses

of lectures could be delivered, and suggested that the summer session would be suitable for this purpose.

Dr. Haviland supported his proposals by numerous arguments of a more or less convincing character, and, indeed, his paper altogether was an eloquent plea for the carrying out of the above objects. But although the meeting seemed to be in full sympathy with the desire to extend a better knowledge of these subjects, the feeling appeared to be general that considerable difficulties stood in the way of carrying out the proposals. It was felt that an almost insuperable objection to any scheme involving the making of these subjects compulsory would be the contention that too many subjects were crowded into the student's time already. We ourselves feel that there is a good deal of force in this objection, and that it might be unwise to include them in the list of compulsory subjects unless the number of years of study be extended, or other subjects of possibly less importance be excluded in favour of medical climatology and medical geography. This, however, is very unlikely to take place for some time to come, and therefore we think that the object of the proposal would be better attained by having these subjects treated as optional in the medical student's curriculum, and the Society might use its influence in obtaining this concession from the examining boards.

There can be only one opinion as to the desirability of greater facility being given to the medical student for obtaining a better and more thorough knowledge of these important subjects. We cannot, however, see why another branch of medical science which is closely allied to those just mentioned, and which is, perhaps, of equal importance as bearing upon medical treatment, namely, that branch which is generally embraced under the title of balneology, should not be included in the foregoing proposals. In these three subjects, climatology, medical geography, and balneology, a very large section of the medical profession is deeply interested, their principals entering into, and exercising a preponderant influence upon, the major part of the practice of this important branch of the profession.

As it may be anticipated that considerable opposition will at first be raised to any proposal to make these subjects even



optional in the medical curriculum, we think it might be desirable in such a case to promote a system of lectures to be delivered in a post-graduate course. To this there could be little objection, and it might, for a while at least, answer every useful purpose by providing for qualified men as well as students, opportunities of obtaining a theoretical and practical knowledge of these important subjects. Thus in this way, both the desirability and the advantages of such courses of teaching would be proved or disproved, and the examining bodies influenced accordingly. If we are not mistaken, many subjects, such as public health, psychological medicine and bacteriology, which are now included in the regular curriculum, were at first taught in the extra-academical or post-graduate fashion we have suggested in the present case.

#### THE PRACTICE OF MASSAGE.

Proposals have been made from time to time for the more efficient teaching and training of persons undertaking the work of administering massage. The therapeutic value of massage and medical gymnastics is now generally recognised throughout the profession, and particularly so amongst medical climatologists and balneologists. Two difficulties, however, are constantly making themselves felt in connection with the subject, one of which is the few really properly trained and instructed attendants to be met with amongst the large numbers who claim to be competent in the art; and the other is the large and growing class of quack practitioners, male and female, that the recent wide adoption of massage as a therapeutic agent has called into existence. It is the latter consideration which to us seems to form the chief difficulty in the way of extending, or continuing the use of massage by the medical profession. Even the various movements which have been started for improving the training and regulating the position of massage attendants, although well-intentioned, are not free from objections. So long as there is no proper State regulation of such matters, these very attempts are not unlikely to prove an additional encouragement to a host of ignorant and unqualified persons, who in the

eyes of the law would be still permitted to make pretensions to a knowledge equal to those better trained, but albeit no more authorised than themselves.

It seems to us that we are nearing the point in the history of massage as a therapeutic remedy when it will be necessary for the profession to come to some definite decision as to the attitude to be assumed towards the question. One of two things would appear inevitable. Either the system must be purged and freed from the abuses and scandals which now exist, and placed upon a proper and regular basis, or medical men will be compelled to abandon the use of massage altogether, and cease to recommend it to their patients. The adoption of the latter alternative would be regrettable, as both physician and patient would suffer the loss of one of the most valuable remedies for the cure of many diseased conditions. It would seem to us that rather than incur such a loss to therapeutic science it would be better to deal with the whole question in a courageous and thorough manner. This would involve an inquiry into the alleged objectionable practices carried on in London in particular, as well as into the question of training and of some efficient system of registration and regulation. Such an enquiry would have for its principal object the exposure of existing evils and the suggesting of suitable remedies; and by such means professional and public opinion might be brought to bear upon Parliament to assist in putting a stop to admitted evils and regulating the legitimate and useful practice of massage.

Various spasmodic efforts have been made at different times (especially by the medical and other organs of the press) in the direction indicated by us, but no serious and organised attempt has yet emanated from the profession. Having in view the fact that health resorts practitioners are more interested in the practice of massage than any other section of the profession, such an investigation would seem to fall more within the sphere of work of the Balneological and Climatological Society than of any other medical Society. This being so the council would do well to take this matter into consideration and, if deemed desirable, appoint a committee to enquire into the whole question.

It is in taking up such works as this that the Society fills a

wide gap which has existed previously in the profession, and we can only express a hope that it will not be found wanting in this as in other matters which press for the services and help of such an organisation.

#### RAILWAY FACILITIES TO BRITISH HEALTH RESORTS.

Since this subject was first discussed by the Balneological and Climatological Society we have noticed with satisfaction that the various railway companies, having connections with British Health Resorts, have carried out numerous improvements both as regards comforts in travelling and reductions in fares.

That there is room for further improvement, a story which has recently appeared in a contemporary is proof. A graphic description is given of the journey to Bath of a lady crippled with rheumatism, who, at the several changes before arriving at that Spa, was provided with the comfort and convenience of a proper invalid's carrying chair, and moved from one train to another in comfort and safety. When she arrived at Bath, however, an ordinary office chair was made to do duty, and the poor invalid suffered proportionately in her transit from the railway carriage. We have before insisted that at all railway termini and junctions, especially having any connection with health resorts, there ought to be provided one or more suitable invalid chairs in which sufferers could be carried or wheeled from one place to another.

Another matter which is worthy of the consideration of railway authorities is a further reduction in the fares to health resorts. There are, of course, many difficulties we admit in the way of this. There is one way, however, in which we think the companies might make a useful and practical concession—by more generally adopting the system of issuing 1,000 mile coupons, as has been done on the North-Eastern Railway. We believe that if this system were adopted by the other railway companies, and thus became generally known, it would be largely availed of by invalids and other members of the tourist class, not only in the summer season but all the year round.

The obtaining of a first-class railway pass available for travelling a distance of 1,000 miles in divided journeys at the discretion of the traveller, either as to time or length of each journey, for a sum of, say, £5, would be appreciated by many. Nor would it, we think, be without additional profit to the companies, since it would encourage more frequent journeys on the part of invalids as well as the general public.

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## Reviews and Notices of Books.

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### THE GEOGRAPHICAL DISTRIBUTION OF DISEASE IN GREAT BRITAIN.

By Alfred Haviland, M.R.C.S. London: Swan, Sonnenschien & Co. 1897. Price 7s. 6d. net.

We are pleased to see that it has been decided to issue this work in a cheaper and more popular form, as we believe that the more wide dissemination of the teaching of medical geography in the profession cannot but be productive of much good. Mr. Haviland's book has long since attained a position amongst the classics of medical science. The results, however, of over ten years' further observations have rendered it highly desirable to issue a new edition, in which are described not only the remarkable facts in the natural history of disease coincident with the well-defined manifestations in their geographical distribution, as in the former edition, but to show how these later disease-facts agree with the earlier facts. With the increase of such facts there has undoubtedly grown up a wide-spread interest in the subject of the geographical distribution of disease, and a desire to know more of all that connects the structures of the human body with its environment. The labours of the author in this wide and fruitful field have been stupendous, and future generations will owe to him a debt of gratitude, the value of which will increase as further facts in this interesting branch of science are unfolded.

The reader will find in the volume before us much food for intellectual digestion. Not the least important chapter is that in which the author deals with disease distribution in its connection with ventilation, or atmospheric changes brought about by means of river valleys. The influx of waters up the river valleys twice in twenty-four hours, apart from the occasions when winds blow up them, must do much to move the stagnant atmosphere, and purge the residual air of its impurities. Mr. Haviland states that "the geographical distribution of heart disease and the circulating organs in Britain affords the best illustration possible of the value of a sound knowledge of ventilation, and points to the fact that wherever the facilities are greatest for constantly changing the air, there is, coincident with these facilities, a *low mortality* from heart disease, and that where the conditions are reversed, as in pent-up valleys, badly arranged and unventilated streets, the results are reversed, as evidenced by the *high mortality*."

"These river valleys," he says, "are also to be considered with regard to the rivers that made them; their length, nature of their beds, whether they are fully formed, flood their riparian districts seasonably, or whether they are torrential in their character, and, if

they flood their valleys, only to do so temporarily; the geological nature of the formations through which they have cut their way to the sea, whether they are retentive like clays, or permeable like chalk and sands."

We have also given to us a glimpse of the nature of the investigations which are connected with the study of disease in its geographical and geological aspects. That the results of such investigations are of the most interesting description, the following statements will show: "During the years 1851-1860 the *highest mortality* amongst females from malignant disease, registered under the name of *cancer*, was to be found in those districts that are riparial to rivers that seasonably flood their adjacent lands; and that, on the other hand, the *lowest mortality* was to be found in those communities enjoying high, dry conditions on the older or palæozoic rock, especially the carboniferous limestone, and on the secondary, such as the oolitic limestone and chalk, or where the rivers are torrential in their flow, and only flood their adjacent areas temporarily. Then, again, with regard to *phthisis*, under which name tubercular diseases of the lungs are registered; in these river-valleys, even when a certain amount of soil-dampness prevails, shelter was found against the strong winds, and coincident with their protective influence, low mortality from this fatal disease was the rule; on the other hand, in the valleys or on the hill sides exposed to the full force of the winds, whencesoever they came, there was to be found the highest mortalities coincident with those climatic conditions.

But is it the simple *force* of these winds that is the fatal element, or is it some other constituent which, finding its way to the diseased lung structures, sets up those inflammatory and retrogressive changes which hasten the death of the patient? For our part we are inclined to think there is a something, with which we are as yet unacquainted, contained in these strong winds which is the real killing factor, and that the *force* of the winds has no relation to the results, excepting in so far as it affects the dose of the fatal property. The author appears to lean towards this view, and instances the action of Koch's lymph as analogous.

We could very profitably linger about these most interesting pages did our space permit; this is, however, impossible, and we must refer our readers to the work itself. It is only necessary to say that the type, paper, numerous coloured and other maps, and the binding, are of the best style and quality.

A SYSTEM OF MEDICINE. By many writers. Edited by Thomas Clifford Allbutt, M.D. Vol. IV. London: Macmillan & Co., Ltd. New York: The Macmillan Co., 1897. Price 25s. net.

We welcome the appearance of this, the fourth volume of Dr. Clifford Allbutt's "System of Medicine." It would seem that the original intention, that this work should be completed in five volumes,

will prove impracticable, and it will be necessary to issue an additional volume, making six volumes in all. The enormous advance which has been made in connection with the theory and practice of medicine during recent years rendered it inevitable that a work of this class would run out to considerable lengths.

The present volume deals with Diseases of the Liver, Diseases of the Kidneys, Diseases of Lymphatic and Ductless Glands, Diseases of the Respiratory Organs, and Diseases of the Nose, Pharynx, and Larynx. It forms no exception to the general excellence which has characterised its predecessors. The various subjects are in the hands of well-known writers, and are dealt with in a comprehensive and exhaustive manner.

Dr. William Hunter is responsible for the first few pages, which are devoted to Diseases of the Liver, and Drs. Hale White, Andrew Davidson, Lafleur, Hawkins, John Thomson, and Mr. Mayo Robson are responsible for the remaining chapters devoted to Liver Diseases. Dr. Rose Bradford discusses the General Pathology of the Renal Functions, Professor Mac Alister writes on Nephroptosis, and Dr. Dickenson on Diseases of the Kidney characterised by Albuminuria. Other diseases of the kidney, such as Renal Fistulæ, Traumatic Nephritis, Renal Abscess, Morbid Growths, Hydatids of the Kidney and Cysts of the Kidney possess an able exponent in Mr. Henry Morris. Dr. W. M. Ord, Dr. Hector Mackenzie, and Dr. W. W. Ord write upon Diseases of the Thyroid Gland, Dr. W. D. Rolleston discusses Diseases of the Spleen and Addison's Disease, whilst Dr. George R. Murray discusses Hodgkin's Disease, and Professor Allbutt and Mr. Pridgin Teale, Scrofula. Sir Dyce Duckworth writes on Obesity. The General Pathology of Respiratory Diseases and the treatment of Asphyxia are in the capable hands of Dr. A. Ransom, whilst Dr. Hector Mackenzie deals with the Physical Signs of the Diseases of the Lungs and Heart. Diseases of the Nose are dealt with by Dr. de Havilland Hall, Dr. Greville Mac Donald, Sir Felix Semon and Dr. Watson Williams. Diseases of the Pharynx and Diseases of the Larynx are in the hands of the same well-known authorities.

We are unable, through pressure of space, to notice in further detail the numerous articles which comprise this volume. It will perhaps be sufficient to say that each author appears to have done his best to sustain the reputation which Dr. Allbutt's "System" has so far attained. It is not too much to say that the work bids fair, when completed, to rank with the greatest works on medicine that the present century has produced.

**CARDIAC FAILURE.** By Alexander Morison, M.D. Edin. London: The Rebman Publishing Co., Ltd., 11, Adam Street, Strand, W.C. 1897. Price 10s.

Dr. Morison, in the work before us, has made a valuable and welcome contribution to the literature dealing with the important

subject of cardiac treatment by baths and exercises. The interest excited in this somewhat new method of treatment of heart disease rendered a work of this character desirable, and we congratulate the author upon the successful way in which he has met this requirement. After dealing with the diagnosis and symptoms of cardiac failure, and discussing the methods of the physical examination of the heart, Dr. Morison devotes an important part of the work to an interesting and instructive discussion of the neuro-muscular and hæmic factors in disease of the heart, and their bearing upon prognosis and treatment, and also a chapter on the general treatment of cardiac failure. These chapters form a valuable introduction to the principal part of the book, which is devoted to the treatment of cardiac failure by baths and exercises.

Dr. Morison deals exhaustively with the much-debated question of the alleged immediate permanent shrinkage of the cardiac organ, as suggested by the undoubted evidence of diminished area of cardiac dulness. He, however, arrives at the conclusion that the evidence in favour of such shrinkage is inconclusive, and believes that the lessening of the area of dulness is due to change of position occupied by the heart, rather than to a reduction in its size.

We are glad to see that he is disposed to accord more importance to the neurotic element in the cases benefited by the treatment than is done by many other observers. He says:—"It is the duty of the rational physician to determine, first, whether benefit be justly attributed to a certain remedy or measure; and next, to enquire into the causes which contribute to that result. And, in view of the importance ascribed in these pages to the management of the nervous system, the lines from Virgil, which I have placed beside the words of Stokes, may be instructively if freely rendered thus:—

"Happy the patient, who, knowing the cause of his ills,  
Can tread underfoot his fears and his cruel fate,  
And listen unmoved to the roar of greedy Acheron.

What help his drugs afford, what willing Nature  
Yields, he uses.

"It is the neurotic, and he who cannot with stoicism or heroism, as the case may be, meet the future with 'a heart (!) for any fate,' who frequently sacrifices by exhausting trepidation his chances of recovery, and brings to nought the wisest efforts of the physician. Nauheim and the active treatment of heart disease, as holding out a new hope to the cardiac patient, seem also at times to have exerted a beneficial influence by calming the fears of those who have not learned to tread them under foot."

In conclusion, we can confidently recommend this work as a comprehensive, thorough and liberal exposition of what is at present known on the subject treated of.



**MASTERS OF MEDICINE: SIR JAMES YOUNG SIMPSON AND CHLOROFORM.**

By H. Laing Gordon. London: T. Fisher Unwin, Paternoster Square. 1897. Price 3s. 6d.

The eminent publisher, Mr. T. Fisher Unwin, is to be congratulated on the enterprise which he has shown in publishing this charming and interesting series of books which appear under the title "Masters of Medicine." "Masters" truly were all the men whose names are inscribed upon this "Roll of Honour," and not the least of these was the subject of this volume—Sir James Young Simpson.

Born of humble parentage (his father was a baker) Simpson rose during his life to the highest pinnacle of eminence in the profession he had chosen, and became one of the greatest benefactors of our race, bequeathing to humanity the practical means whereby untold pain and suffering could be dispelled.

Dr. Laing Gordon, in a graphic and interesting style, relates the incidents of Simpson's early childhood, his student days, his early practice, his discovery of anæsthetics, and his fight for anæsthesia. He describes the inner character and home-life of the man, and relates to us much that has hitherto been only known to a few.

It appears strange to persons of the present day to read of the extraordinary opposition which was raised against Simpson's efforts to introduce the use of chloroform in medical and surgical practice. And stranger still is it to find that the most violent and bitterest antagonists were found amongst teachers of the Christian religion. But the courageous physician fought the fight through to ultimate and complete success, and the profession as well as the public now daily reap the fruits of his labours in an untold measure. These fruits are well summed up by the author when he says:—"The horrors of the operating room referred to in the preceding chapter were vanquished with the pain; the surgeon has no longer to steel himself for the task as formerly, to wear a stern aspect and adopt a harsh manner. The patient has no longer to be held down by assistants; instead of having to be dragged unwillingly to the operating-table—a daily occurrence sickening to the hearts of fellow-patients and students, while it served only to harden the surgeon and the experienced old nurse of those days—he will walk quietly to the room, or submit patiently to be carried there, and at a word from the surgeon prepare

" . . . . . to storm  
The thick, sweet mystery of chloroform,  
The drunken dark, the little death-in-life.

"The operation is no longer a race against time; order, method, cleanliness and silence prevail, where there was formerly disorder, bustle, confusion, dirt, and long-drawn shrieks. Nothing illustrates better the progress of surgery than a picture of the operating room

in the first decade placed beside that of an operating theatre in one of our leading hospitals in this the last decade of the nineteenth century. In the quiet of the patient, in the painlessness of the operation, in the calm deliberation of the operator, and the methodical order for all around him, in the respectful silence that prevails in the room so soon as the patient is laid on the table, we see the direct results of the introduction of anæsthetics. But there are other great, if less direct, results, each making its presence known to the professional spectator. By anæsthesia successful operations, previously unheard of and unthought of, were made possible after the principle of antiseptic surgery had been established; by anæsthesia, experimental research, which has led to numerous beneficent results in practical surgery and medicine, was made possible. Its introduction is an achievement of which the Anglo-Saxon race may well be proud. Wells, Morton and Simpson are its heroes. The United States has by far the greater share of the honour of its discovery; but to Scotland is due the glory which comes from the victorious fight."

Our readers would do well to procure this book, which, whilst pleasant and entertaining, is well calculated to encourage and stimulate the busy and hard-worked practitioner to pursue with greater vigour and attention the objects of that profession which are at once noble and exalting. Dr. Laing Gordon has done his work in a way which will add to his reputation as a writer of no mean order and ability.

TEMPERANCE IN THE VICTORIAN AGE. By Dawson Burns, D.D.  
London: The Ideal Publishing Union, 19, Memorial Hall, Far-  
rington Street, E.C. 1897.

The author of this work is widely known and respected in connection with temperance work, and perhaps no one was better qualified to undertake a review of the progress of temperance reform during the sixty years of Her Majesty's reign.

Whilst many of our readers will be inclined to differ from the author in some of his arguments and deductions, others will admire the persistent and praiseworthy efforts which he and his co-workers have made, and are still making, to diminish the evils of intemperance. We only wish that the work of the temperance reformer were characterised by more moderation and less intemperance of speech and conduct than one is accustomed to meet with. If this were so, we believe that the cause of true temperance would make greater headway, and at this we should all rejoice.

As a concise and well-written historical survey of the subject, the present volume may be recommended with confidence.

DISEASES OF THE SKIN. By *Utile Quod Facias*. Edinburgh: E. and S. Livingstone. 1897. Price 2s. 6d. net.

This is an admirable little work which will be welcomed, we feel sure, by a large number of students, and even by older practitioners. The author lays no claim to originality, and has compiled it with an intention that it should be carried about in the pocket when attending skin clinics. Used thus it will be found invaluable. The descriptions of the various diseases, although necessarily short, are clearly and simply expressed, and the numerous excellent coloured illustrations form a really valuable feature of the manual.

NOTES OF THIRTY-TWO CONSECUTIVE ABDOMINAL SECTIONS, WITH THIRTY RECOVERIES, PERFORMED WITHIN THE LAST SEVENTEEN MONTHS. By James Macpherson Lawrie, M.D. London: John Bale, Sons, & Danielsson, Ltd., Oxford House, Great Titchfield Street, W. 1897.

These "notes" formed the substance of a paper read before the meeting of the British Medical Association at Montreal in 1897. They relate to an interesting series of operations by abdominal section, performed by a provincial surgeon, Dr. Macpherson Lawrie, of Weymouth, whose exceptional experience makes the expression of his views worthy of attention. Thirty-two of such major operations in seventeen months, or about two in each month, with only two deaths, speaks well for the improved methods of recent days, as also for the skill and care of the operator. Dr. Lawrie has not merely given us here an analysis of these cases, but has presented us with short notes of each individual case, which are of an interesting and instructive nature. His remarks on the preparation of patients for operation, the details of operative procedure, and the after-treatment are worthy of careful perusal.

ANATOMICAL LECTURE DIAGRAMS. London: John Bale, Sons, and Danielsson, Ltd., 85, Great Titchfield Street, W. 1897. Price 2s. 6d.; post free 3s. Mounted on linen 5s.; post free 5s. 9d.

Messrs. Bale, Sons, and Danielsson have sent us a series of these most useful diagrams. They form a really marvellous production at such a low price, consisting of twelve excellent diagrams (including two coloured plates of the blood circulation), each plate being about 24 inches by 12, and executed most correctly and clearly. The diagrams will be found extremely useful to teachers and students, and would also form a valuable addition to every consulting room. The price for the twelve diagrams mounted is only 2s. 6d. the set.

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## BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY.

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A general meeting of the Society was held on Wednesday evening, October 27, at 20, Hanover Square, London, W., Dr. A. E. MYRTLE in the chair.

Dr. SUNDERLAND (Honorary Secretary) read the minutes of the general meeting held in June, which were approved.

Mr. KEETLEY read his report as Treasurer, and remarked with reference to the Journal that it had been so successful as to warrant the hope that it would soon be self-supporting.

Dr. SNOW moved and Dr. IVOR MURRAY seconded the adoption of the Treasurer's report, which was thereupon unanimously agreed to.

Dr. MYRTLE then proposed that Dr. Snow, who had been unanimously elected to succeed him in the chair, should now assume his duties as President. He need not, he said, detain them by saying much about his old and valued friend, whom many of the members knew perhaps almost as well as he did himself. Dr. Snow occupied a very high position in the profession, especially as an authority in all matters pertaining to chest affections. No man knew better than Dr. Snow how to deal with these, and the very excellent paper he had submitted to the Society last session upon the climatic treatment of consumption was one of the most interesting he (Dr. Myrtle) had ever listened to. Of infinitely greater value than the papers read were the results which followed them, and in the case of that presented by Dr. Snow these were most charming ; it had been the means of bringing amongst them some of the highest authorities in everything relating to phthisis, above all, men from other countries, such as Dr. Carl Roedi. Dr. Myrtle said, in conclusion, that he had great pleasure in vacating the chair in favour of Dr. Snow, who, he hoped, would meet with the same considerate treatment he had himself experienced from the members of the Association. He looked back upon the time he had spent in the presidency of the Society as about the most

# BALANCE SHEET OF THE BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY.

*Dr.* *For the year ending September 30, 1897.*

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To Balance in hand from last account	...	4	10	6	...	12	4	6			
" Subscriptions received	...	...	152	15	6	...	2	9	6		
" Donation received— Dr. A. S. Myrtle	...	...	6	6	0	...	10	7	2		
			...	...	...	...	8	2	6		
" Unpaid Accounts— Printers (General Account)...	...	...	13	4	6	...	3	3	0		
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*Examined and found correct* (MORGAN DOCKRELL.  
ERNEST SNARE.

agreeable portion of his professional life. He had no doubt that Dr. Snow, by the dignity he would bring to bear upon his presidential duties, would succeed a great deal better than he had himself done in promoting the progress and all the interests of their most promising Society.

Dr. SNOW, having taken the chair, thanked the members most heartily for their kindness in electing him President of the Society, and said he could only hope it might prosper in future years even nearly as well as it had done during the last year under the able presidency of Dr. Myrtle. The fact that Dr. Myrtle had occupied that position had a great deal, he thought, to do with the increase in the membership during the past year.

Dr. THEODORE WILLIAMS rose to propose a vote of thanks to the esteemed retiring President, Dr. Myrtle. All those acquainted with Dr. Myrtle, he said, knew that to meet him was to meet no common man. He was one of those men who struck them at once as possessing a great power of dealing with human kind. He was no doubt a profound physician; but he was more—he had a profound knowledge of human nature, and when the Society elected him their President they did one of the wisest things they could possibly have done. He had promoted the prosperity of the Society in every possible way. He stood as a monument of what a man could do in his own neighbourhood, for, he was given to understand, there was now in Harrogate one of the most perfect establishments for treatment by waters that could be found anywhere, in which the people of this country could find everything that was necessary and need not go to the various health resorts abroad. It was a great thing that in England not only were there to be found a certain amount of skill and cleverness in the great cities, but equal skill and cleverness and large experience were to be found in provincial centres, and particularly in some health resorts. Among those health resorts and the medical men practising in them Dr. Myrtle and Harrogate, he thought, stood out prominent. During his presidency Dr. Myrtle had conferred great benefits upon the Society by the way in which he had worked on its behalf and the manner in which he had presided over its meetings.

Sir RICHARD DOUGLAS-POWELL seconded the vote of thanks

and said he was sure the Society in its early days had profited very greatly by having a man of Dr. Myrtle's experience to preside over its affairs—a man too of Dr. Myrtle's knowledge of the world. He very cordially endorsed what Dr. Theodore Williams had said, and was sure the vote of thanks would be most cordially accorded by the Society.

Dr. MYRTLE, in responding, expressed his hearty thanks for the kind terms in which reference had been made to the work he had done in connection with the Society. He would like them all to understand that men who practised at health resorts were not antagonistic to the general practitioner. They wished to work with him, or rather, he might say, under him and after him. They did not wish anyone to suppose that they advocated that people should come to them when suffering from any complaint which could thoroughly well be treated by a recourse to means which all medical men applied and which were to be found in the pages of the "*Pharmacopæia*." What they wished the profession to understand was that at their health resorts they had therapeutic measures which were available after other means had failed : and it was in these circumstances they hoped to be patronised, so that in the event of any medical man finding that after a fair length of time the patient did not respond to the treatment usual in particular cases he should give one or other of the various health resorts a chance. He was pleased to think that the Society was no longer to meet in a hotel. They had secured, he was happy to say, for the next twelve months the room they were occupying, and if a larger one was required there was one to go to. It was a great matter that their surroundings should be in keeping with their character and aims ; and he hoped that under their new President that room would be too small to accommodate the numbers who should attend the meetings.

Dr. BLAKER moved a vote of thanks to Dr. Hyde, who had, in addition to the duties of Chairman of Council, acted as Editor of the Journal during the past year. They all knew, he said, the difficulties of the post—that of collecting material, for instance ; but he was sure they would all acknowledge having received great benefit from the perusal of the Journal—a great deal more even than they got at the meetings, since they had at

leisure the privilege of reading the proceedings afterwards, and those who were unable to attend were likewise able to follow with interest the transactions throughout the year.

Dr. LEWIS seconded this resolution most cordially, remarking that the old adage which declared that nothing succeeded like success was well illustrated by the Journal. They had only to look at the three issues that were already before the public to recognise that they had the right man in the right place.

Dr. MYRTLE, in supporting the motion, desired to say that several gentlemen high in the profession had told him they had joined the Society simply on account of the Journal, so much valuable information had they found in its pages.

Dr. SNOW, in putting the motion, said he was astonished to see how excellently the Journal had been edited, and expressed his great pleasure at the success that had attended the efforts of Dr. Hyde.

Dr. HYDE, acknowledging the vote, said he wished he had the facility of verbal expression possessed by their late President to enable him to thank them properly for their kind appreciation of his efforts. He always shrank from public speaking and would rather use his pen than his tongue ; but he begged to assure them that he was truly grateful for the many kind things that had been said in appreciation of his efforts. Anything he had done to contribute to the success and prosperity of the Society had been done *con amore*, and he hoped that all their efforts in the future would be attended with double the success that had attended them in the past.

Dr. JAMES MYRTLE, jun., proposed a vote of thanks to the Council, the Treasurer and the Secretaries. To the latter officers he said the vote had special reference. Without a competent treasurer and competent secretaries the Society could not have found itself in the flourishing position it now occupied. He trusted they might long fill the offices they now so ably held.

Dr. GAGE BROWN seconded.

Mr. KEETLEY responded as Treasurer, but remarked that more credit for the successful work of the Society was due to the Secretaries than to himself.

Dr. WARD HUMPHREYS replied on behalf of the Council, and



took the opportunity of thanking the Society for putting him in the position to do so. The work of the Council in any Society, he said, was most important and necessarily anxious, but it was never so important and perhaps never so anxious as in the early days of its existence. It was, he thought, partly due to some of the efforts the Council had made that the Society had met with such success as had been recorded. From the great interest shown by the Council in the work of the Society—evidenced by the way in which some of its members came from distant parts of the country to attend its meetings—he was sure its interests were perfectly safe in their hands. The Journal was eloquent testimony to the value of the services of the Chairman of Council, Dr. Hyde, and promised well for the future of the work the Society was established to do. The Council had decided that the thing should be done well, and he was sure they would agree that in asking Dr. Hyde to undertake the editorial work a very wise step had been taken—one that had redounded both to the credit of Dr. Hyde himself and the foresight of the Council.

Dr. MACFARLANE and Dr. SUNDERLAND (Secretaries) also acknowledged the vote of thanks.

The meeting then constituted itself into an ORDINARY MEETING.

Dr. SNOW then delivered his Presidential Address.<sup>1</sup>

Dr. BAGSHAW (Hastings) proposed a vote of thanks to the President for his interesting address. There were, he said, many points in which Bournemouth and Hastings might be compared and on which he would like to speak, but he would refrain. Dr. Snow had very ably pointed out the advantages which accrued from the presence of pine woods. That pine woods were useful and formed a very material advantage to a climate, all of them, he was sure, who were resident in places lacking that feature were quite prepared to admit. Dr. Snow had spoken of the complete shelter which Bournemouth enjoyed, but he would himself have liked to hear more of shelter from north and east winds. It would appear that the shelter was due almost entirely to the pine woods and did not depend, as in many other places that might

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<sup>1</sup> See p. 1.

be mentioned, such as Ventnor, on ranges of hills to the north. Dr. Snow had spoken of the water supply, which he (Dr. Bagshawe) believed was very efficient. On the question of a salt water supply he would advise Dr. Snow and those in authority at Bournemouth to profit by the experience of Hastings where, partly from the causes Dr. Snow has mentioned, they had entirely discontinued the use of the salt water for watering the roads. The roads after being sprinkled with the salt water became coated with a glassy surface when they dried under the sun that they became dangerously slippery for horses to traverse. The use of salt water for this purpose was rather to be deprecated than encouraged. For present use at Hastings they had, and were going to have for the future, a very large supply of good water, which would enable them to be entirely independent of the use of salt water even for flushing the drains. It was exceedingly useful to compare notes with respect to the different resorts, and for the valuable material Dr. Snow had furnished the Society was deeply indebted to him.

Dr. IVOR MURRAY (Scarborough) seconded the vote of thanks. The President had, he said, especially emphasised the great benefit to be derived at Bournemouth by cases of phthisis. For himself, he (Dr. Murray) thought it scarcely advisable to send patients in the early stages of phthisis, in the early part of the year at all events, to relaxing places like Bournemouth. In Scarborough they found that such cases did remarkably well up to the time of the commencement of the east winds. These, as a rule, did not become prevalent till March or April. He was not speaking, of course, of advanced cases of phthisis. Once the east winds set in the patients had to be sent away. Up to the commencement of the east winds—certainly up to Christmas—they had a charming climate, and patients could get out in the open air almost the whole day and did exceedingly well. He thanked Dr. Snow for the very able and interesting address.

Dr. MYRTLE, supporting the vote of thanks, trusted that at some future time they would have the opportunity of discussing not only Bournemouth but many other health resorts. The presidential address did not afford the opportunity of discussing anything, being as a rule accepted without comment further than

was incidentally made in thanking the President. He trusted they would all take into consideration the fact that unless they brought forward the treatment they found most successful at their health resorts and contrasted it with that afforded elsewhere, they could not expect to keep up that interest which they hoped would be elicited at future meetings.

Dr. SNOW thanked the members for the way his address had been received.

Mr. ALFRED HAVILAND (Douglas) then moved the resolution standing in his name with respect to the establishment of a chair of medical climatology and geography.

Dr. THEODORE WILLIAMS thought the suggestion of Mr. Haviland an exceedingly good one. To him they owed a magnificent atlas of geography connected with the different diseases of the country. That something of the kind Mr. Haviland advocated should be introduced into the medical curriculum had often seemed to himself extremely desirable. He thought it might easily be done; in a very small number of lectures the student might be given a very fair insight into medical climatology. At present nothing seemed to be done in that direction. Sir Richard Douglas-Powell indeed, he believed, used to introduce something of the sort into his lectures on *materia medica*. The University of Oxford gave questions on meteorology in their examinations—questions about temperature and how to take barometrical observations, &c.—but as regards exact medical climatology he did not know any examining board that followed this plan. He came across many medical men who frankly confessed they knew nothing about climate whatever. Very little study would enable such to master the general principles of the subject, so that the number of observers might easily be extended and the amount of climatological knowledge available be increased. It was very desirable to convert all the medical men at health resorts into climatological observers. He heartily seconded the proposal.

Dr. CLIPPINGDALE (London) supported the proposition as a general practitioner. Before leaving the hospital, he said, they were taught many things, but as soon as they left and went into general practice they discovered they had not been taught

everything. They had sometimes to buy their experience rather expensively. The greatest ignorance as to the nature of climates in different places, as to the relative value of soils, of height and distance from water, existed not only among general practitioners but also among some consultants. One method in which the general practitioner might remedy the defect in his medical education was by spending his holidays at different health resorts. Medical geography as well as climatology was a subject on which there was lamentable ignorance. Dr. Clippingdale instanced the preference given to gravel over clay soils without taking into consideration other important factors to be considered before recommending a locality. Such a motion as Mr. Haviland's, he said, deserved great support.

The matter was referred to the Council for consideration, and if necessary, the formation of a Committee.

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The following gentlemen were then balloted for and elected Fellows of the Society :— Henry Johnstone Campbell, M.D., Bradford ; H. E. Leigh Canney, M.D., Assouan, Egypt ; William Thomas Gardner, M.B., Bournemouth ; P. Johnston Freyer, M.A., M.D., London ; Matthew William Gairdner, M.B., Naples ; James Frank Holland, M.D., St. Moritz ; Michael George Foster, M.D., London and San Remo ; William C. Scholtz, Cape Town ; William Pitt-Palmer, M.B., Babbacombe ; Frederick N. Ozanne, L.R.C.P., Harrogate ; Leonard John Minter, M.D., Uxbridge ; Joseph Shuter Hill, L.R.C.P., London ; R. Welsh Branthwaite, M.D., Rickmansworth ; Frederick John McCann, M.D., London ; Charles Percival White, M.A., M.B., London ; Alfred Thomas Tucker Wise, M.D., Montreux.

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At a meeting of the Council held on December 1, 1897, the following gentlemen were appointed Members of the several Committees named below :—

*Committee of Referees on Communications and Publications.*

F. BAGSHAWE, M.A., M.D.  
 ALFRED HAVILAND, M.R.C.S.  
 A. S. MYRTLE, M.D., J.P.  
 T. N. THURSFIELD, M.D., J.P.

*Journal and Publications Committee.*

(THE PRESIDENT) W. V. SNOW, M.D.  
R. O. G. BENNET, M.D., J.P.  
MORGAN A. DOCKRELL, M.A., M.D.  
R. FORTESCUE FOX, M.D.  
ALFRED HAVILAND M.R.C.S.  
SAMUEL HYDE, M.D.  
H. SHIRLEY JONES, M.R.C.S.  
C. R. B. KEETLEY, F.R.C.S.  
HENRY LEWIS, M.D.  
A. A. MACFARLANE, L.R.C.P.  
A. S. MYRTLE M.D., J.P.  
S. SUNDERLAND, M.D.  
H. WARD-HUMPHREYS, M.R.C.S.

*Committee on Medical Climatology and Geography.*

S. D. CLIPPINGDALE, M.D.  
R. FORTESCUE FOX, M.D.  
ALFRED HAVILAND, M.R.C.S.  
SAMUEL HYDE, M.D.  
THEODORE WILLIAMS, M.D.

*Finance Committee.*

Dr. WARD HUMPHREYS.  
THE TREASURER.  
THE CHAIRMAN OF COUNCIL.  
THE AUDITORS (Dr. MORGAN DOCKRELL and Dr. ERNEST SNAPE).  
THE SECRETARIES.

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## BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY.

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AN ordinary meeting of the Society was held on Wednesday evening, December 1st, at 20, Hanover Square, London, W., Dr. SNOW (President) in the chair.

Dr. SUNDERLAND read the minutes of the last ordinary meeting, which were approved.

Six gentlemen were elected Fellows of the Society.

Dr. HEDLEY (London) exhibited and described an electric radiant heat apparatus. In many forms of pain, arthritis, and gout, he said, the application of a localised high temperature had been found a very effective remedy. He proposed to show an apparatus available for such purposes. The first thing that struck one in looking at heat appliances utilised for curative influence was that some *medium* was employed for the application of the heat to the body: it might be hot air, or "superheated dry air," as it had been called, or some heat retaining substance, such as hot water, hot sand, some heated metal, and even hot mud. By using radiant heat exclusively the necessity of employing these media was done away with. Even air was not necessary, for radiant heat travels freely even through a vacuum. The air might be freezing and yet the radiation from the heating lamp would be propagated and warm the body on which it impinged. Radiation was the propagation through the ether of impulses imparted to it from the molecular movement of a heated body. Heat rays might be either luminous or obscure. There was no essential physical difference between the heat rays which warmed our bodies and the light rays that affected our organs of vision: they were both movements of the ether and were governed by the same laws. All bodies radiated heat, and when their temperature rose above that of surrounding bodies the heat radiations could be detected and measured. A very instructive experiment in connection with this was that of gradually heating a platinum wire and measuring its radiations by means of a thermopile placed near it. When it was still black but just beginning to warm, the obscure band of the spectrum would be found to be

represented by a very low figure, say 1 ; heated to a red heat it would be perhaps 20 ; as it reached a white heat it would mark probably 100, showing that as the more rapid vibrations were added the old ones became more intense. The moral of that was that in order to get intense heat a luminous source of heat must be employed. Any solid form of combustion, such as a fire, was obviously unsuitable for the purpose. So were naked gas jets as they burned at a low temperature and with very imperfect combustion. Incandescent gas would do, but there were drawbacks connected with the use of the mantle which rather put it out of court. Gas-heated asbestos was not a bad thing, but the best and most manageable was the heat obtained from an electric lamp. That produced heat without combustion and the evils that accompanied combustion. The points he wished to establish were as follows : First, radiant heat was desirable inasmuch as it enabled one to dispense with media and project the heat upon any part of the body ; second, the heat producing source ought to be luminous ; third, in his experience the electric lamp was the best source of heat for the purpose. Wishing to have a heating apparatus in accordance with these considerations he had consulted Mr. J. H. Dowsing,<sup>1</sup> an electrical engineer who had paid great attention to electrical heating. That gentleman constructed for him the apparatus shown, under one of his patents, which he had been previously using for cooking purposes. It essentially consisted of two copper reflectors. On the reflecting surfaces were two broad filament electric lamps. The reflectors were so constructed that the heat was diffused off the lamps, and it could be projected on any part of the body. The reflector was the essential part of the apparatus, the stand being a mere matter of convenience consisting of two uprights joined by a crossbar with movable ring clamps admitting of approximation of the reflectors and other clamps to allow of lowering or heightening. Thus the reflectors could be moved in any direction desired. A platform was provided on which could be rested a limb on which it was desired to employ the apparatus : this platform could be lowered or raised and, if necessary, removed altogether as when the neck,

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<sup>1</sup> 24, Budge Row, Cannon Street.

back or chest was the region to be acted on. The amount of heat to be got from electricity was astonishing; it was quite a mistake to suppose the electrical light was never hot. By means of an asbestos cloth a partially enclosed space could be obtained. The amount of heat could be regulated by varying the distance of the reflectors or the number of lamps used. There was no limit to the size of the reflectors or the number of lamps, so that the necessity for any closed receptacles was obviated.

Dr. DOUGLAS KERR (Bath) asked if, seeing the amount of heat generated would produce perspiration, Dr. Hedley could tell, from actual experience, whether blistering or any similar inconvenience was produced.

Dr. FORTESCUE FOX (Strathpeffer Spa) asked whether the apparatus had been used experimentally in rheumatic or arthritic affections and what results had been obtained. The apparatus struck him as a valuable and suggestive one.

Dr. HEDLEY replied that blistering might undoubtedly be produced, but it had only to be watched. He had never produced any blistering by its use. The patients, unless the limb were anaesthetic, would themselves give warning sufficient to enable greater separation of the reflectors, which was easily managed. He had notes of about a dozen cases, amongst them one of sciatica, one of recent sprain and several of rheumatoid arthritis, and the results had been at least as good as those obtained from any known form of heater, including the "superheated hot air" cylinder.

The PRESIDENT thanked Dr. Hedley for bringing to the notice of the Society so ingenious an apparatus, and remarked that some notes on his experience of it when that was more advanced would be deemed a valuable contribution to the pages of the Journal.

Dr. SHAW MACKENZIE (London) read a paper on the Treatment of Syphilis by External Methods.

Dr. SOLLY (Harrogate) contributed notes on the External Treatment of Syphilis.

Dr. MORGAN DOCKRELL (London) thought the thanks of the Society were due to Dr. Shaw Mackenzie for his paper, although there were many points in it with which at least some of the members would not agree. He considered it a pity that Dr.



Mackenzie had wandered from the original title of the paper, namely, *The External Treatment of Syphilis*. They might have confined themselves entirely to that, and the paper might have been more complete without the little digression that had been made. Two methods of external treatment had been especially mentioned in the paper, inunction and fumigation. He believed they would all admit that inunction was a very excellent, though a very dirty treatment, and that where they could get results without resorting to inunction it was just as well to get them. Dr. Shaw Mackenzie, however, had not come holding a brief for those who advocated inunction; he knew that everybody conceded its merits. He had come to try and resuscitate an old treatment, that of fumigation, which he (the speaker) thought was long ago dead and buried except in a few cases. To support his particular contention Dr. Shaw Mackenzie had cited authorities up to 1856, when Dr. Henry Lee brought forward the fumigation treatment, and there was no doubt that that method was then probably a great boon, for at that time syphilis had been going through—as it had been since the introduction, in 1492, of the mercury treatment—a system of treatment in which salivation was the great object aimed at, and the question was whether the salivation by the mercury, or the syphilis did the most harm. Therefore, any treatment which modified the use of mercury was likely to be beneficial. Moreover, they now knew that hot baths given while mercury was being administered aided very materially in helping the general treatment of syphilis. It was therefore just a question whether up to the particular time Dr. Shaw Mackenzie had alluded to, when Mr. Henry Lee advocated the treatment, good had not arisen more from the hot air than from any mercury absorbed into the system. They all knew the old joke about having to dip the head under the sheet after having had the bath for so many minutes, and from that probably benefit was derived. Mr. Henry Lee had admitted to Dr. Shaw Mackenzie that he thought it absolutely necessary to increase the dose very considerably, although he had had a large number of cases which he treated by fumigation, using 30 grains of calomel, with results so good that after three months it was quite unnecessary for the patients to continue the treatment. He (Dr. Dockrell) thought it was held

by a number of authorities that where the fumigation method was employed, with calomel, for instance, and especially where water was evaporated at the same time, that the water and the excessive perspiration prevented the proper absorption of the mercury, yet according to Dr. Lee, the patient got better and remained well after three months' fumigation, although none or very little of the mercury had been absorbed. Again, where hot air and the alcoholic lamp were used, the mercury being volatilised, the treatment had been given up by many from the absence of good results. The real position with respect to fumigation was, he believed, that the calomel used was practically useless, that the internal method was certainly beneficial and was greatly aided by hot air baths. These given several times a week along with the internal treatment and out-door exercise formed the most convenient method, and that most likely to be beneficial. It has, moreover, been found that small and continuous doses of mercury administered over a long period proved more convenient. There was no doubt that certain conditions (which, however, were somewhat rare) in syphilis, such as the miliary papular syphilide—a very rare condition—were greatly benefited by hot air baths; but in this fumigation system he believed it was the hot air or the vapour that did good by helping elimination of the mercury taken internally. Another part of the paper to which he took exception was that in which Dr. Shaw Mackenzie alluded to certain conditions of pregnancy after delivery. It was worthy of notice that when a woman who, after delivery, showed a marked tendency to debility and to loss of hair, was put on small doses of mercury, she generally got very rapidly better and remained well afterwards. Those, he believed, were the cases in which latent syphilis was present, and that would probably develop syphilis later on in life.

Dr. Morgan Dockrell expressed his sense of the value of Dr. Solly's paper as bringing home to them the importance of sending patients to places near at hand where they could have the inunction treatment carried out properly away from the immediate vicinity of the patient's business or occupation. They could thus at the same time foster home health resorts and help to check the tendency to send patients out of the country.

Dr. ST. CLAIR THOMSON wished to refer to some experience he had had, limited to special practice, in connection with syphilis: its effects, namely, on the nose and throat, about the treatment of which he felt very strongly. Dr. Shaw Mackenzie had not stated in what stages of syphilis he approved of fumigation with calomel; but he understood him to imply that, other things being equal, it was given in all stages, primary, secondary and tertiary. He wished to express his cordial approval of the administration of mercury in tertiary syphilis, as affecting, at any rate, the nose and throat. There seemed to be an idea abroad that mercury was "the tip" for primary and secondary, and iodide of potassium that for tertiary syphilis. Though those with wide experience in other departments of practice were possibly justified with iodides, he wished to enter a strong appeal in favour of mercury in the treatment of tertiary syphilis of the nose and throat. Syphilis attacking that region was fraught with terrible consequences to the patient—more so than in any other part of the body except the brain. The disfigurement apt to ensue from affection of the nose, the stenosis of the pharynx which it was almost impossible to overcome, and the stenosis of the larynx which was also difficult to obviate and led to the most horrible of deaths from suffocation were results they all dreaded. He wished, too, to enter a claim for the administration of the mercury by the skin. In hospital practice he had had great opportunities of seeing mercury administered by the mouth at the instance of his colleagues. They had given the usual hydrarg. cum cret., the grey powder pill, three, four, five or six times a day, or the liq. hydrarg. perchlor.; and, acting under them in many cases, he had had opportunities of witnessing the inefficiency of that treatment. He had seen gummas in the pharynx hardly at all improve under that system; while, once the patients were put on the inunction method (which was the only one he had any experience of) the improvement was most rapid. Not only had he seen a gumma, threatening to break through the septum of the nose, entirely disappear, but in other cases that had not come under treatment soon enough and a large sequestrum of the bony septum had formed, he had found that the sequestrum having been removed, after treatment by mercury the patient had not suffered

from disfigurement of the nose. It was a common idea that the disfigurement of the nose following tertiary syphilis was due to giving way of the septum. It was not the septum, however, that kept up the nose : the nose was kept up by the bridge on each side. It was the development of cicatricial tissue where there had been large destruction of the inside of the nose that caused the disfigurement. The prompt administration of mercury before retraction had set in had entirely prevented disfigurement although little septum remained. He had found equally satisfactory results in the pharynx and larynx. The iodide resolved the symptoms, but would frequently not suffice to check the consequences he had mentioned. A patient, after having been under the treatment of one of the most noted syphilographers of London for nine months, during which he had taken the grey powder pill three times a day, came to him suffering from a stinking discharge from the nose, from which he had removed a large sequestrum. That, it might be said, might have happened with inunction. It at any rate showed that treatment by the mouth was not sufficient in preventing these dangers. He was not quite carried away by what Dr. Shaw Mackenzie had said in favour of fumigation. In spite of the objections to inunction, it could be carried out in a wonderful way. He had treated officers in camp at Aldershot while they were under canvas, yet their brother officers knew nothing about it. Similarly he had employed it in the case of the only sons of mothers who knew nothing of the treatment, although it was carried out at home. He had never felt the necessity of keeping the patients indoors. Officers in camp had gone riding about, while other patients had indulged in hunting and shooting—all being warned, of course, not to expose themselves to cold. The average duration of treatment was from three to six weeks, which, if it was as effective as fumigation was a great saving of time. In tertiary affections of the larynx, however, he had found fumigations of great service, especially when the tongue had been affected. It was extremely difficult in such cases to draw out the tongue and administer treatment directly to the larynx on account of the pain caused. An instrument could be employed by the patient himself in these circumstances from which the calomel fumes could be inhaled. In all these syphilitic affections of the upper air

passages local treatment was of the greatest service in seconding the inunctions. In tertiary affections of the upper air passages he placed mercury first and iodide second, and, unless other causes prevented, the mercury should be given by the skin.

Dr. SCANES SPICER cordially supported Dr. St. Clair Thomson's statements as to the application of calomel by fumigation in diseases of the upper air passages. For the last twelve years, by means of Sir Morell Mackenzie's apparatus, this had been his routine treatment. In such cases as that instanced by Dr. St. Clair Thomson, where a sequestrum was found at the end of nine months' treatment by grey powder, there must have been some forewarning of a sequestrum, and he personally would have used calomel fumigations locally. Fumigation as applied to the nose, pharynx and larynx in local manifestations of syphilis was most efficient. He had had no experience of general fumigation as a constitutional method of treatment.

Dr. FORTESCUE FOX (Strathpeffer Spa) had, he said, had the opportunity of testing the value of mercury in connection with sulphur waters, but had accumulated very little experience in that direction, partly on account of advice given him by an eminent authority on syphilis in London, who had very strongly cautioned him against associating in any way the resort to which he was then going with anti-specific treatment. He remembered reading an interesting book by a Frenchman in Savoy, Dr. Royet, in which he emphatically approved and described in considerable detail the use of mercury there in association with sulphur. He took Dr. Shaw Mackenzie's view, that its specific action was materially aided by the further specific action of sulphur in encouraging the emunctories, especially the action of the skin. All who practised at mineral spas were acquainted with the fact that after a hot bath, especially a hot sulphur bath, the cutaneous affection was much more pronounced. Eruptions of all kinds were apt to be increased, and especially was it so in syphilitic affections. The efflorescence was much more vivid, and the primary effect might be to spread it considerably at the beginning of treatment. The action on the skin was therefore well-marked. He had seen a certain number of these cases, but had experience of inunction only, having never tried calomel fumigation. In his experience

the mercury had been exceedingly well borne, and could be pushed without the smallest sign of disagreement with the patients who retained their outdoor habits, and the symptoms had decidedly diminished. He would like to ask what apparatus Dr. Shaw Mackenzie used and how often the fumigations were repeated during the period of three months.

Dr. SEPTIMUS SUNDERLAND read an extract translated from the *Gazette des Eaux* of a paper read at the Berlin Balneological Congress of 1897, by Munter, and of a paper by Neissier, published in the *Berliner Clinische Woch.*, in April, 1897, of which he (Dr. Sunderland) had translated a small abstract for the last number of the *Balneological Journal*.

The extracts were as follows:—"Hydrotherapy combined with mercury in secondary syphilis, and with iodine in tertiary syphilis gives excellent results. The influence of hydrotherapy is certain, since smaller doses of the drugs are necessary in the combined treatment, during which mercurial and iodine poisoning are never noticed" (Munter).

"Balneotherapy increases the action of iodine and mercury. Baths rich in mercury and in iodine are powerful agents in extensive syphilitic eruptions. The influence of baths in general and of saline and sulphurous baths especially, depends upon the fact that they cause mercury to be excreted more rapidly from the system. Baths are found capable of causing fresh excretion of mercury long after it has ceased to be excreted in the ordinary way" (Neissier).

If they were to believe exactly what was said by the writers, he thought the spas of England, Wales and Scotland, ought to take their share in the treatment of syphilis.

He had been interested in Dr. Shaw Mackenzie's remarks about the treatment of certain obscure pelvic exudations in women. Iodine and mercury were often given in such cases, not with the thought that there might be syphilis but with the idea that their resolvent action might be beneficial and the exudations did, indeed, often disappear. It was possible that in some of these cases the mercury might produce the result by action on syphilitic poison. He agreed with Dr. Shaw Mackenzie's remarks on the inadequacy of the provision for the treatment of syphilis in

women. Such patients had not uncommonly to be sent away when they ought to be taken into hospital. The weak point about the treatment by fumigation seemed to him to be that it was deemed advisable to keep the patients indoors. He believed that if it were possible to let them have plenty of fresh air it would be all the better.

Dr. BOWEN DAVIES (Llandrindod Wells) said he had little experience in the treatment of syphilitics which, as they might be a source of contagion to others, he was rather inclined to advise that they should seek some other place.

Dr. SHAW MACKENZIE, in reply, expressed his complete agreement with what Dr. Solly had said about external methods of treatment at Harrogate. The only point he did not quite gather in what Dr. Solly had said was as to the arterioles being dilated or contracted. If they were dilated by mercury that would seem to support the theory of elimination of the virus by the skin through dilatation of the superficial arterioles. He had not before known that Harrogate was a winter resort. In that way it had an advantage over so many sulphur resorts which, though well adapted for summer treatment were not so suitable for winter. His particular motive for bringing forward his paper was not, as Dr. Morgan Dockrell seemed to think, to resuscitate fumigation, but rather, as the pendulum seemed to be swinging back to the inunction and skin treatment, to justly pay tribute to the methods which had been practised by Mr. Henry Lee for the last forty years and which he was still advocating. The use of mercury was to some extent empirical, whereas on the microbic theory and immunity by elimination, fumigation and inunction fulfilled this principle. Dr. Dockrell agreed with him as to hot baths and diaphoresis. He himself had no doubt they aided a great deal in the administration of mercury internally, but he should like to ask Dr. Morgan Dockrell whether the hot air bath and hot baths were practised when the pill administration was adopted by him. As to the interference with the action of the calomel by perspiration and vapour, Mr. Henry Lee had distinctly stated that it was not the sweat bath but the fumigation bath that was used, so that the skin should be in such a condition as to absorb the calomel deposited on it. As for wandering from

the original subject of his paper he had asked permission from the Society to mention that he had found inunction and fumigation most serviceable in the treatment of diseases of women and he was quite unaware that such routine treatment of pelvic diseases had been brought forward before, at all events the explanation of its efficacy. Dr. Dockrell had himself, however, endorsed the treatment of pelvic disease by mercury given internally. The whole question of efficacy of treatment seemed to him (Dr. Mackenzie) the question of relapses. He was particular to point out the extraordinary amount of chronic syphilis that existed. The question of relapse was an extremely difficult and invidious one, but an authority like Mr. Lee who had practised fumigation for forty years was in a position to express a strong opinion on the subject, and he stated that relapses were few after fumigation. That the internal administration of mercury was, as stated by Dr. Dockrell, more convenient, was a mere cry of expediency which should never be brought forward when the welfare of the patient was at stake. He desired to thank Dr. St. Clair Thomson for his kind remarks and to state that fumigation was advised in every stage. Mr. Henry Lee had given it from the primary manifestations, also in the secondary stage, and stated that it was useful in tertiary conditions, often removing them when internal administration had no effect. Mr. Lee especially mentioned syphilitic diseases of the larynx as curable by mercurial fumigation. Believing that many of these conditions were due to malnutrition, fumigation and inunction were valuable in promoting nutritional processes, or, at any rate, not interfering with them. Dr. St. Clair Thomson preferred inunction as more convenient, but patients who had gone to Aix-la-Chapelle for inunction had often to repeat their visit more than once. Inunction, therefore, did not seem to ensure the patient against relapse in the same way as fumigation. He could hardly believe Dr. St. Clair Thomson's period of three to six weeks' treatment was sufficient unless tertiary syphilis was meant. When the calomel fumigation bath was begun in the primary disease and continued for three months, patients required little or no treatment afterwards. He agreed with Dr. Scanes Spicer's remarks as to local fumigation in diseases of the nose



and larynx ; that had been recommended by Mr. Lee as well as general fumigation. He used a lamp, which could be obtained, for the purpose and he had been in the habit of recommending the employment of five to ten grains of calomel for such local fumigation. The apparatus used for general fumigation was that usually known as Mr. Lee's fumigating lamp—made of wire with a spirit-lamp over which was a china vessel made to hold water and the powder in separate dishes. Some of the lamps sold as such were of old date, and he (Dr. Mackenzie) did not believe in them, as metal was used instead of china and the calomel ought to be sublimed from a porcelain or china receptacle. The patient had a cloak round him ; he breathed a little of the vapour ; the whole of the mercurial powder was deposited on the surface of the skin. He slept in the cloak, and the procedure was repeated every night for three months if the patient could tolerate it. At the end of that period it might be intermitted. Another method was to make the patient sit in an ordinary wooden vapour cabinet in which the powder was evaporated. On coming out he was surrounded by a blanket in which he remained for a short time before dressing. This was done every day. Dr. Sunderland's objection to the indoor treatment again raised the question of expediency *versus* efficiency. If the patient wanted to be cured of syphilis it was better to go thoroughly in for the treatment and get rid of the thing, if possible, once and for all.

Dr. MORGAN DOCKRELL explained that he had not, as Dr. Shaw Mackenzie stated, spoken of having treated pelvic cellulitis by internal administration of mercury ; he had merely mentioned having so treated women who after delivery had suffered from debility and loss of hair.

Dr. SOLLY said the treatment he had described led not necessarily perhaps to an actual dilatation of the arterioles but to a potential dilatation, restoring their power of contractility which had been lost, so that the vasomotor system had expansile instead of rigid arterioles to deal with, which explained some of the benefits to internal as well as external lesions and helping elimination by increasing the blood supply to the skin. He heartily endorsed Dr. St. Clair Thomson's remarks with reference to mercurial treatment at all stages of the disease. With reference to

relapses, there was, he said, something in favour of shorter courses of treatment since many patients could only spare three weeks as a maximum for it at a time, and had to distribute the whole treatment over two or three years. While a continuous course was preferable it was not always practicable.

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The following gentlemen were then balloted for and elected Fellows of the Society :—F. Rufenacht Walters, M.D., London ; William Case, M.R.C.S., Caistor-on-Sea, Norfolk ; Montagu Handfield Jones, M.D., London ; William Bain, M.D., Harrogate ; C. B. Thomas Musgrave, M.D., Cromer ; Patrick Letters, M.D., Valencia Island, Co. Kerry, Ireland.

#### DISCUSSION ON CARDIAC DISEASE.

A paper will be read on "The Treatment of Cardiac Disease by Baths, Exercises, and Climate," by Dr. S. Hyde, at the next ordinary meeting of the Balneological and Climatological Society to be held on the evening of January 26, at 20, Hanover Square, London, W.

Amongst those who have already intimated their intention to take part in the discussion are :—Drs. A. Ernest Sansom, George Oliver, William Ewart, Bezly-Thorne, Alexander Morison, Black-Jones (Llangammarch), Douglas Kerr (Bath), Shirley Jones (Droitwich), and Ward-Humphreys (Cheltenham).

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### Obituary.

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HENRY WILLIAM FREEMAN, F.R.C.S.I., M.R.C.S.ENG., L.R.C.P.LOND.

IT is our painful duty to record the death of Mr. H. W. Freeman, J.P., of Bath, which took place at his residence on November 21, 1897.

At the time of his death Mr. Freeman was only 55 years of age, and although he had frequently suffered serious indisposition during the past few years, his fatal illness came as a surprise and shock to many of his friends. He took much interest in the late visit of the Duke of Cambridge to Bath, and exerted himself greatly in helping to make that function a success. On November 11, 1897, he was compelled to take to his bed, when signs of severe cardiac failure showed themselves and the disease rapidly proved fatal.

Mr. Freeman was a native of Devonshire, having been born near Westward-Ho in 1842. He pursued his medical studies at Middlesex Hospital, and having obtained the membership of the Royal College of Surgeons in 1864 he obtained the post of Resident Medical Officer of the Royal United Hospital, Bath, the following year. On relinquishing this appointment he commenced to practise in Bath, and ultimately acquired a large and lucrative practice. He devoted himself largely to operative surgery, and was early elected Honorary Surgeon to the Hospital before mentioned.

He will, however, be best remembered in connection with the efforts he put forth for promoting the development of the baths of Bath, which at the time of his going to reside in that city had fallen into disuse. To further this object, he visited many of the principal health resorts of Europe, and in 1887 he paid a visit to the springs of Saratoga and Virginia. Indeed, it may be said that it was owing in large measure to his persevering efforts that Bath has succeeded in regaining its lost position as one of the most important spas in Europe. In 1889, Mr. Freeman occupied the position of Mayor of Bath, and during his

Mayoralty entertained H.R.H. the Duchess of Albany on the occasion of the opening of the new baths. In connection with his literary efforts, his best known work was "The Thermal Baths of Bath," a book of considerable merit, which must have entailed a large amount of labour on the part of the author. Mr. Freeman was well known throughout Great Britain and Ireland as the owner of a large stud farm, which he kept for the breeding of thoroughbred horses. This seems to have obtained for him a notoriety outside the profession, where he will also be greatly missed.

Mr. Freeman was a vice-president of the British Balneological and Climatological Society, and at a largely attended meeting of the Council held on December 1, 1897, a vote of condolence to his widow and family was unanimously passed by the meeting on the proposal of the chairman, Dr. Hyde (Buxton), seconded by Dr. Douglas Kerr (Bath), and supported by Dr. Snow (Bournemouth), and others. When the proposal was first made for the founding of the Society, Mr. Freeman was one of the first to give it his warm and earnest support, and the Society has suffered a great loss by his death.

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## Scientific Gleanings.

### AIR WAVES.

A very interesting confirmation of the theory of air waves, as advanced by Helmholtz, to which we alluded in our articles on "Scientific Ballooning" has appeared in *Wiedmann's Annalen*. According to Helmholtz, air waves result when layers of air of different temperatures pass above one another. A wind producing water waves of 1 metre length would, with a temperature difference of 10° cent., give rise to air waves 2 and more kilometres in length, and air waves of 15 to 30 kilometres would correspond to water waves of 5 to 10 metres. The air waves are probably frequent, but we do not notice them, as they would cover the area of our horizon, unless mist condensations take place in the wave crests where the pressure would be reduced. We then see parallel cloud bands. Such waves, which we pass at elevations of several kilometres, send us the rain showers which occasionally fall at regular intervals during the day, and they may be responsible for gusty weather, and play an important part in meteorology. Helmholtz was inclined to regard them as one of the chief causes of the disturbances in the labile equilibrium and in the gradual intermixing of various air currents; there would be air breakers for instance. In the paper mentioned, R. Emden refers to his balloon ascent from Munich in the Akademie on November 7, 1896. The temperature down below was 2·7° C., at 9.50 a.m.; the air was clear. The balloon, which carried a trailing rope 200 metres in length, rose first in due course, but soon reached a position of equilibrium. The thermometer had gone up to 9·2° C., and it remained shady, while on throwing out ballast the balloon rose from 200 to 1,300 metres. There was now, fifteen minutes after starting, a thick cloud bank underneath, about 7·5 kilometres in length, subdivided in a strange fashion, the bands forming sixteen huge sausages, about 540 metres apart, floating between 100 and 200 metres above the ground; the inner sausages appeared to be of greater diameter than those near the edges of the bank. The warm current had an easterly direction; the

cloud bands were arranged north and south at right angles to the current, which to judge by the track of the balloon, had a velocity of 12·5 metres per second. The warm wave soon reached the ground. Emden considers that the temperature difference, the velocity of the air current, and the distances between the parallel cloud bands were in close agreement with the theory.—*Engineering*.

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#### WEIGHT AND GRAVITY.

M. J. DEROME, in *La Nature* (Paris).

People have not very clear ideas on this subject, and perhaps it will not be a bad plan to give to these ideas a little more precision. It is well known that we owe to Newton the discovery of the law of universal attraction, in virtue of which all bodies attract each other in the direct ratio of their masses and inversely as the square of their distances. But what is the mass of a body? In mechanics this word is given a very precise definition; but we content ourselves ordinarily with saying that the mass of a body is the quantity of matter that it contains. This is a notion that has nothing to do with the idea of weight, to which we now come. Newton made the celebrated discovery just mentioned while seeing an apple fall from the top of a tree; this discovery, in fact, is simply that weight is only a particular case of universal attraction; weight, at the earth's surface, is the attraction that the earth exerts on the bodies that surround it, and we give the name of the "weight" of a body to the resultant of the action of gravity on all the particles of that body. In virtue of this attraction a body held in the hand and left to itself falls, and experience teaches that in the same place all bodies fall in the same direction, which we call the vertical direction of that place. Everything happens as if the whole mass of the earth were concentrated at its centre, which had become the sole point of attraction, so that the vertical is directed towards the centre of the earth. It can be seen, from the second part of the law of gravitation, that the weight of a body is therefore greater as the body is nearer the

earth's centre. In fact, weight, or, as we generally say, gravity, is greater at the foot of a mountain than at its top, and at the poles than at the equator, owing to the flattening of the earth at the poles. Nevertheless, this cause does not suffice fully to explain the difference between the values of gravity at different points on the globe ; this difference depends especially on the movement of rotation of our planet, which causes a modification of gravity by centrifugal force. There are also variations that calculation cannot foresee, if, as a first approximation we suppose the earth to be shaped like a perfect geometrical solid of revolution. What is the result of the fact that this supposition is not a reality ? In the neighbourhood of a mountain, for instance, bodies feel the attraction of this mountain in greater degree as its mass is greater ; and from the combination of this attraction with that of the rest of the globe it results that the vertical is deviated slightly toward the mountain, which deviation has a sensible effect on very precise measurements.

On the other hand, consider two stations having the same latitude and height ; gravity should have the same intensity at both. But suppose that in the depths of the earth, just under one of them, there are great cavities, empty spaces due, for instance, to subterranean earthquakes. We may say that to these spaces correspond quantities that must be subtracted from the value of gravity as it would be calculated on the supposition of a perfectly solid globe. But the influence of distance on the amount of attraction makes smaller for the station far removed from the scene of such a subterranean catastrophe than for the one near by. The result is that gravity will be feebler at the latter station. These two phenomena—deviation of the vertical and unforeseen variations of the intensity of gravity—constitute what have been called “local anomalies.” It can be seen that, reasoning inversely, the systematic study of local anomalies can give us valuable information about the exact form and constitution of our globe ; so this problem is of the highest interest in the science of geodesy. . . . Thus at Bordeaux, for example, gravity has been found sensibly weaker than would be supposed from the geographic situation of that city. This curious fact

has been accounted for by supposing the existence, beneath Bordeaux, of vast caverns like those spoken of above.

But then, it may be said, if we should buy at Bordeaux, for instance, a pound of gold weighed on a balance, and sell the same at Paris, we should do a good stroke of business, for what weighs a pound at Bordeaux will weigh more at Paris, where gravity is stronger. Ah ! this is a serious mistake, though it is a widely spread belief, and the error lies in these words : "we weigh a substance with a balance." In fact, a balance does not serve at all (at least not directly) to *weigh* bodies, but only to *compare their masses*. We have seen what difference there is between the mass, which is a quantity of matter, and the weight, which is a force. In fact, the balance is a lever, and in the condition of equilibrium of the lever we have to do with forces, in this particular case they are weights. This may be understood by an example : suppose that in one of the pans of a balance at Paris we put one of the bits of brass that constitute the weights of commerce, and bring the balance to equilibrium by placing in the other a certain quantity of gold in lumps. Carry the scales thus loaded and balanced to Bordeaux where gravity is weaker than at Paris. The pans will still balance, because, if we may so speak, the amount lost in weight by the gold will have been lost also by the brass, their masses being equal. So a balance compares masses, quantities of matter ; that is to say, magnitudes independent of the place of observation. Consequently, commercial weights that have been verified, for instance, at Paris, can be used anywhere, provided the balance is employed with them. The result is that the words "weight of a body" are generally used for "mass of a body," and it is much to be regretted that in the language of science no substitute has been adopted for the misleading expression "to find the weight." But what we have said of the scales does not apply at all to the dynamometer of spring balance, with which we can determine the weight of a body directly, generally by the amount of deformation that this body causes in a spring that sustains it. We can see that the graduation of such a weighing machine holds good only for the place where it is made, for it is a force—the weight—that pulls on the spring of the instruments.



### Notes, News and Items.

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THE Honorary President of the Balneological and Climatological Society, Sir Edward H. Sieveking, has recently offered a portion of his library, consisting of books and pamphlets relating to the subjects of balneology and climatology, as a free gift to the Society. It is hoped that arrangements will shortly be made for housing a library, so that the Council may be in a position to accept this generous offer, and thus one of the primary objects of the Society, namely, the founding of a library, may be inaugurated at an early date.

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DR. ISAAC DOBRÉE CHEPMELL, who has practised for many years in Brook Street, Hanover Square, and was one of the first Fellows of this Society, has within the past few months been obliged to give up work on account of failing sight, and has retired to a small sea-side village near Brighton. A man of active and enthusiastic temperament and habit, and skilful fencer, Dr. Dobrée Chepmell bears his misfortune with serenity and fortitude, occupying his time by interesting himself in literature and taking long walks.

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DR. BAGSHAW, J.P., of St. Leonards, one of the Vice-Presidents of this Society, was recently appointed Mayor of Hastings. We wish him good health and a successful year of office.

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BATH.—An admirable movement has been inaugurated by the Mayor of Bath. Recognising the desirability of securing the co-operation of the medical profession and the Corporation in developing the usefulness and prosperity of Bath as a Spa, the

Mayor of that place invited the local members of the profession to a meeting for a discussion of the best means of carrying out these objects. Under the tactful guidance of the Mayor the meeting is said to have been very harmonious, and it was agreed unanimously to carry out the Mayor's suggestion that a committee, consisting of the whole medical profession of Bath, should be formed, and that this general committee should appoint an executive committee and a sub-committee. This is a movement in the right direction, and might with advantage be imitated in other health resorts.

---

ARRANGEMENTS have been made for the holding of an International Congress of Balneology in Vienna in March next. Communications relating to the Congress should be addressed to the general secretary, Dr. Brock, Berlin.

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A COMMITTEE under the presidency of Dr. Brouardel, the dean of the medical faculty of Paris, has already been formed in that city to arrange the preliminary details of the International Medical Congress, which is to be held in Paris during the great exhibition of 1900.

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INVESTIGATIONS have lately been carried out by the County Council to ascertain the properties of the chalybeate springs, which exist on Hampstead Heath near to the Leg of Mutton pond. The water, which contains a fair percentage of iron, is stated to be palatable and absolutely pure, the flow being constant, and averaging between fifteen and twenty gallons an hour.

---

TORQUAY.—Under the recommendation of their Medical Officer of Health, Mr. Karkeek, the Town Council of Torquay have decided to purchase the catchment area of their water supply. The water sub-committee of the Corporation has advised the acquirement of the whole of the land with the primary object



of removing all human habitations from the water-shed, and thus safe-guarding the water supply. This is a very spirited policy on the part of the Corporation, the wisdom of which, however, greatly outweighs the cost.

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EXMOUTH.—We have a very different picture of sanitary administration presented by the recent action of the Exmouth Urban and District Council. It appears that Dr. Kemp, the Medical Officer of Health, in a letter which appeared in the *Times* of December 8, pointed out that the Exmouth death rate was only 6 per 1,000, and that with "a little sanitary energy on the part of the Council" this health resort might be elevated to a still higher position of envy, and expressed a hope that the Council would now carry out the necessary works of re-laying the old street sewers and attending to other matters reported upon without delay. This plain speaking on the part of Dr. Kemp seems to have given great offence, and at a special meeting held on December 16, 1897, he was censured, requested to apologise, and asked to resign his position as Medical Officer of Health. This is but one more illustration of the stupid arrangement of Local Government Board administration, which makes its medical officers subject to the ignorant and foolish caprices of local administrative bodies.

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THE friends of Mr. Tamplin, of Ramsgate, will be glad to learn that he has within the last few weeks been able to resume work, after being invalided for a period of seven months from septic poisoning of the hand and arm, which necessitated amputation of the thumb and several other operations. Some idea of his at one time desperate condition may be conceived by the knowledge that he was anæsthetised every day for seven or eight weeks for the necessary operations and dressing of wounds.

---

HYGIENE OF BATH-VESSELS.—In a paper read before the last Berlin Congress of Balneology, Baginski showed to what degree the water in bath-vessels is soiled by micro-organisms after having been used for baths. As a rule it is almost impossible

to sufficiently clean and purify the vessels by ordinary methods. The soiling of the water by germs increases, as would be expected, with the number of bathers, and with the duration of the immersion.—*Gazette des Eaux.*

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SIDMOUTH.—A curious error of judgment was committed by a representative of the *British Medical Journal* a short time ago in describing a visit to Sidmouth new sewerage works. He spoke of "the baths and Nauheim treatment as carried out at Sidmouth under Dr. Leon." The mention of the individual name of one of the local practitioners of Sidmouth in such a connection has very naturally given offence to the members of the profession residing at Sidmouth, and has drawn forth a protest signed by these gentlemen, including Dr. Leon himself, and our respected contemporary has expressed its regret that its representative should have fallen into the error complained of.

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### **Literary Notes.**

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THE Rebman Publishing Co. have ready for early publication a small book by Mr. D'Arcy Power entitled, "Some Points in the Anatomy, Pathology and Surgery of Intussusception," being the Hunterian Lectures for 1897, delivered at the Royal College of Surgeons.

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#### **"THE LARYNGOSCOPE."**

Many readers will be interested to learn that the Journal bearing this title, and which has met with so much success in America, is to have an European edition. This edition, which is to circulate in Europe, India and the Colonies, will be under the charge of Dr. Sinclair Thomson. The Journal is to be issued simultaneously in Great Britain and America, commencing with the present month. It will consist of 64 pages and will be well illustrated. The price is 1s. monthly, or 10s. per annum, post free. We wish the Journal success in representing an important branch of medicine on this side the Atlantic.

## Books, &c., Received.

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SWAN, SONNENSCHN & CO. :

The Geographical Distribution of Disease in Great Britain, by Alfred Haviland, M.R.C.S. Price 7s. 6d. net. 1897.

MACMILLAN & CO., LONDON AND NEW YORK :

A System of Medicine, by many writers. Edited by Thomas Clifford Allbutt, M.D. Price 25s. net. 1897.

THE REBMAN PUBLISHING CO., LTD., LONDON :

Cardiac Failure, by Alexander Morison, M.D. Edin. Price 10s. 1897.

T. FISHER UNWIN, PATERNOSTER SQUARE, LONDON :

Masters of Medicine : Sir James Young Simpson and Chloroform, by H. Laing Gordon. Price 3s. 6d. 1897.

THE IDEAL PUBLISHING UNION, FARRINGDON ST., LONDON, E.C. :

Temperance in the Victorian Age, by Dawson Burns, D.D. 1897.

E. & S. LIVINGSTONE, EDINBURGH :

Diseases of the Skin, by Utile Quod Facias. Price 2s. 6d. net. 1897.

JOHN BALE, SONS & DANIELSSON, LTD., GT. TITCHFIELD ST., LONDON, W. :

Notes of Thirty-two Consecutive Abdominal Sections, with Thirty Recoveries, performed within the last seventeen months, by James Macpherson Lawrie, M.D.

Anatomical Lecture Diagrams. Price 2s. 6d., post free 3s. Mounted on linen 5s., post free 5s. 9d.

VERLAG VON AUGUST HIRSCHWALD, BERLIN :

Allgemeine und Specielle Balneotherapie mit Berücksichtigung der Klimatothérapie, von Dr. Karl Grube.

Specielle Diätetik und Hygiene des Lungen—und Kehlkopf—Schwindsüchtigen, von Dr. Felix Blumenfeld.

Ueber den gegenwärtigen Stand der Behandlung Tuberculöser und die staatliche Fürsorge für dieselben. Vortrag in der 3. öffentlichen Sitzung des xii. Internationalen Medicinischen Congresses zu Moskan am August 25, 1897, gehalten von E. von Leyden.

Allgemeine Brunnendiätetik Anleitung zum Gebrauche von Trink- und Badekuren, von Dr. J. Biessel.

Bad Gastein. Nach den neuesten Hilfsquellen bearbeitet, von Dr. Carl Gager.

THE AUSTRALIAN MEDICAL GAZETTE, September, October and November, 1897.

THE HOSPITAL, January 1-8, 1898.

TREATMENT, October 28 ; November 11, 25 ; December 9, 23, 1897.

MEDICAL MAGAZINE, January, 1898.

QUARTERLY MEDICAL JOURNAL, January, 1898.

## Notices.

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### TO CONTRIBUTORS.

Literary communications, books for review, &c., should be addressed to the EDITOR, c/o Publishers, Oxford House, 85-89, Great Titchfield Street, London, W.

Suitable articles, climatological reports, vital statistics, and reports of current events from health resorts are invited.

Correspondents must attest their communications with their proper names and addresses (not necessarily for publication).

Contributions should be written *on one side* of the paper only.

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The insertion of any letter or article bearing a name or *nom de plume*, in these columns, does not necessarily indicate our adhesion to the views or statements contained therein.

Correspondence relating to general business should be addressed to the Publishers, JOHN BALE, SONS & DANIELSSON, LTD., 85-89, Great Titchfield Street, London, W.

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### BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY.

MEDICAL practitioners desiring information about the Society can obtain full particulars from the Hon. Secretaries—

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11, Cavendish Place,

Cavendish Square, London, W.

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1, Montpelier Terrace, Brighton.

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# THE JOURNAL OF BALNEOLOGY AND CLIMATOLOGY.

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APRIL, 1898.

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**Original Communications.**

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**BUNDORAN AS A HEALTH RESORT.**

BY R. H. CREIGHTON, M.B., R.N.S.

*Visiting Surgeon to the Sheil Hospital, Ballyshannon.*

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SOME one hundred and odd miles north-west of Dublin, on the south shore of Donegal Bay, is situated the village of Bundoran, from time immemorial the health and holiday resort of the inhabitants of the north-west of Ireland.

The village consists of one long straggling street running parallel to the beach. The houses, at a height of from 20 to 100 feet above the sea level, are built on a carboniferous limestone and shale formation. They are sheltered from north and north-east winds by the mountains on the north side of the bay, while the easterly winds, having to cross the island before reaching us, are much milder than on the east coast of Ireland.

Owing to the influence of the Gulf Stream which strikes the coast, the climate is exceptionally mild and at the same time wonderfully bracing.

No local record of sunshine has been kept, but I have observed that as a general rule during the season, very wet days are rare, while heavy showers alternating with spells of sunshine are not uncommon. Fog is practically unknown ; we have only had three foggy days during the last eight years.

The rainfall of the district, from observations made at Ballyshannon, averages 41·64 inches. More falls during the night than in the day.

The following table shows the average number of wet, showery and dry days in each month of the season during the years 1893 to 1896 inclusive. It refers to daytime only. I have termed a day "showery" when although rain or even heavy rain fell, still it has cleared up sufficiently for an invalid to take at least two or three hours' out-door exercise. "Wet" and "dry" explain themselves.

Month.	Wet.	Showery.	Dry.	Total
May ... ..	3	8·75	19·25	31
June ... ..	4·5	11·5	14	30
July ... ..	6	12·75	12·25	31
August ... ..	7·75	11	12·25	31
September ... ..	4·5	8·25	17·25	30
	25·75	52·25	75	153

The next table gives the average direction of the wind in days per month, compiled from observations made during the years 1894-5-6. It will be observed that the wind is west, south-west, and south for 82 out of 153 days, or rather more than half the season.

Month.	Calm.	N.	N.W.	W.	S.W.	S.	S.E.	E.	N.E.	Total.
May ... ..	·3	5	3·3	8·6	·6	3·3	4·6	3·3	1·6	31
June ... ..	1·3	3	3	13·3	1·3	1·3	3·3	3	·3	30
July ... ..	0	3·3	2·6	14·3	2·3	2·6	1·6	3·3	·6	31
August ... ..	0	6·3	3·6	13·6	2·3	2·3	·6	2	0	31
September ... ..	·3	5	·6	9	·3	7	2	5·6	0	30
	2	22·6	13·3	59	7	16·6	12·3	17·3	2·6	153

The water-supply is only fairly good at present, but pipes are being laid to bring a first-rate water from a source about five

miles outside the village. Each house has its own drains, which vary much in value ; in many houses w.c.'s are unknown, the closets being in the yard or garden at some little distance from the house, but in this connection the very small death rate from drainage diseases should be noted—only six cases in ten years.

The larger houses, and especially the Highlands Hotel, are now in a thoroughly satisfactory sanitary condition.

The permanent population, according to the last census, was 764 ; in the month of August it is estimated to increase to over 4,000.

The village of Bundoran is built on portions of two divisions of land (known in Ireland as "townlands") called Drumacrin and Magheracar. The population of Bundoran (visitors excluded) is 764, and the population of the townlands outside the limits of the village is about 230 or 240, so the total permanent population of the two townlands is practically 1,000.

It frequently happens, in the case of small towns or villages like Bundoran, that the name of the townland and not of the village is inserted in the death-register. For this reason I soon found it absolutely necessary, in calculating the death-rate, to take into account all the deaths which occurred in the two townlands, but from my local knowledge I had no difficulty in distinguishing between natives and visitors.

The total number of deaths for the ten years examined was 156, being 130 natives and 26 visitors. But the number of native deaths is too small, as any pauper from the townlands who dies in the Union Workhouse at Ballyshannon is registered as having died at Ballyshannon, and no note is made in the death-register of where he came from. I am informed that the average number of deaths in the workhouse in each year from Magheracar and Drumacrin is two ; so therefore allowing twenty deaths in the workhouse and five (an over-estimate) for natives dying elsewhere, I take it that the total number of deaths for the ten years examined should be 155 natives—a death-rate of 15·5 per thousand per annum.

In the following analysis of deaths no note is taken of persons dying in the workhouse, but the twenty-six visitors have been included.

(1) Zymotic Diseases	...	...	9 cases	...	7 certified	...	2 uncertified.
(2) Accidents	...	...	9	"	...	9	"
(3) General Diseases	...	...	43	"	...	16	"
(4) Diseases of Nervous System...	...	...	19	"	...	16	"
(5) " Respiratory System	...	...	41	"	...	25	"
(6) " Heart	...	...	12	"	...	11	"
(7) " Kidney	...	...	6	"	...	5	"
(8) " Infants	...	...	5	"	...	3	"
(9) " Digestive Organs	...	...	11	"	...	9	"
(10) Miscellaneous	...	...	1	"	...	0	"

making in all 156 deaths, of which 101 were certified and 55 uncertified. Of the zymotic diseases the seven certified cases were one each scarlet fever, typhus, enteric, influenza, rheumatic fever, and two cases diarrhoea. One uncertified case is described as fever, the other as diarrhoea. The accidents were all cases of drowning—eight were visitors and one an inhabitant. General diseases include cases of scrofula, cancer, debility, old age and chronic rheumatism. Phthisis caused seventeen deaths according to the register, but most of seven uncertified deaths returned as due to bronchitis were probably tubercular.

The case referred to under the head of Miscellaneous died, according to the entry in the register, from "Pain in the Back;" needless to say it was uncertified, but it is interesting as showing what indefinite information as to the cause of death some registrars will accept. Deceased was a male, aged 39.

*Ages at death.*—Under one year=8; over one and under five=8; five to twenty=15; twenty to forty-five=21; forty-five to fifty-five=19; fifty-five to sixty-five=23; sixty-five to seventy-five=35; seventy-five to eighty-five=11; eighty-five to ninety-seven=13.

The climate of Bundoran seems specially suited for convalescents after surgical operations, for struma in children, selected cases of debility due to old age and chronic rheumatism. With regard to anæmia and chlorosis I am unable to lay down a general rule; I have seen some cases greatly benefited while others apparently affected in an exactly similar manner and degree have been unable to stay more than a few days on account of headache and insomnia. Other diseases benefited are neuralgia, heart disease with only slightly disturbed compensation, gastric and hepatic dyspepsia, menorrhagia and amenorrhœa, ulceration of os, chronic endometritis and metritis, &c.

In my experience it is absolutely unsuited for cases of pulmonary phthisis and respiratory diseases generally ; a few cases of old-standing chronic bronchitis are sometimes improved by a short stay.

Excellent hot and cold salt-water baths are provided at the Highlands Hotel at moderate rates, cheaper accommodation is supplied at two other bath-houses in the town, but at present there are none of the modern complicated baths in the village.

For open sea bathing ladies usually go to the west end of the village, where at full tide good and absolutely safe accommodation is provided. There are also boxes for men and women on Single Street Strand, chiefly patronised by the farming class.

For gentlemen the best bathing is in a creek named Rogne, just under the Golf Links ; it is only safe for good swimmers, but splendid safe dips can be taken by non-swimmers in the larger rock pools.

Accidents at Bundoran are always due to strangers bathing through ignorance or against advice in dangerous places. For the last three years a local committee has employed men to warn and protect visitors ; since then we have had no fatal accident.

The Bundoran Golf Club has playing rights over the Highlands Hotel Co.'s Golf Links (a good but easy nine hole course, the par score is 75), and a good club-room in the hotel. Temporary members are admitted and competitions are held every month.

Concerts are given at intervals during the season in the Town Hall.

But for the amusement of its visitors Bundoran chiefly trusts to its natural advantages. It has a splendid rocky beach of unlimited extent, the tide at low water receding some 100 to 150 yards, with plenty of rock pools ; the cliffs are low, about 50 feet high ; small caves are plentiful. A mile and a quarter from the village a very fine Strand (Tullan Strand) stretches for a mile and a-half to the mouth of the river Erne. Close under the town is Single Street Strand, some 400 or 500 yards long.

The extensive coast line and the diversified features of the country inland offer a wide field for investigation, within comparatively small limits, to the botanist and zoologist. Many rare

plants are found in the neighbourhood, including some Alpine species, in the Dartry Mountains (four or five miles from Bundoran).

The rock pools possess a rich marine fauna, and the use of a tow-net from a boat will repay the trouble. Owing to the roughness of the sea and the exposure of the coast line to Atlantic gales dredging is disappointing. The fresh water fauna is also well worthy of notice, and like the marine requires working out. In Lough Melvin (distant three miles) is found in addition to salmon, trout and char, the famous gillarow, or trout with a gizzard (*salmo stomachicus*), and from some of the small mountain lakes very rare fresh-water sponges and a wealth of microscopic organisms have been recorded.

For the sportsman or woman Bundoran is one of the best fishing centres in Ireland; it is within easy distance of Lough Erne, Lough Melvin and the Erne River; the two latter teem with salmon and trout, while when the May Fly is "up" Lower Lough Erne is second only to the West Meath Lakes.

There are some very pretty drives in the neighbourhood and the country round is rich in antiquities.

The charts from which I have compiled my account of the wind and weather were very kindly placed at my disposal by R. G. C. Flower, Esq., District Inspector, Royal Irish Constabulary, and were recorded by him while stationed in this district. I am also indebted to Mr. J. B. Chism, the District Superintendent Registrar, for permitting me to examine his books without fee and for giving me every possible assistance.

I can best conclude by quoting a few lines from Willie Allingham's "Emigrant's Farewell," a poem which finds an echo in the heart of every visitor :—

"Farewell to you, Bundoran, and the summer crowds that run  
From inland homes to see with joy the Atlantic's setting sun;  
To breathe the buoyant, salted air, and sport among the waves,  
To gather shells on sandy beach, and tempt the gloomy caves;  
To watch the flowing, ebbing tide—the boats, the crabs, the fish;  
Young men and maids to meet and smile, and form a tender wish;  
The sick and old in search of health—for all things have their turn;  
And I must quit my native shore and the winding banks of Erne."

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## THE TREATMENT OF CARDIAC DISEASE BY BATHS, EXERCISES AND CLIMATE.<sup>1</sup>

BY SAMUEL HYDE, M.D.

---

MR. PRESIDENT AND GENTLEMEN,—In an article contributed by me to the *Medical Magazine* of March, 1895, when discussing the physical treatment of heart disease at Spas, I stated that my experience confirmed in large measure the remarkable results that had been obtained in the treatment of diseases of the heart by baths and exercises at Nauheim. I also expressed the opinion that the wider scientific and systematic treatment of cardiac affections, upon these lines at suitable British Health Resorts, would yield similar good results to those at Nauheim. Since that date the treatment has been adopted at many of our inland and seaside resorts, and the present time appears favourable for the discussion of this treatment in the light of such extended experience.

The methods of treatment, to which the title of my paper refers, although not new in principle are comparatively new to practice, and, like all new remedies for the treatment of disease, they have to pass through those necessary stages of trial and verification which alone can entitle them to recognised rank in the healing art, or can, on the other hand, justify their being relegated to that long list of vain and useless therapeutic agents which form such a dark and discouraging chapter in the history of medicine. Nor can it be claimed for the particular methods referred to, that they have yet passed through these stages successfully, for although the evidence in their favour leads one to hope for their early establishment upon a sound and scientific basis, there has been so much disagreement amongst those who advocate these methods, that they have been, and still are, viewed with considerable scepticism by a large section of the profession.

Now I will at once say, that my own experience in the

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<sup>1</sup> Paper read in opening a discussion at a meeting of the British Balneological and Climatological Society, January 26, 1898.

treatment of heart affections by baths, exercises and climate, has been very limited as regards the use of artificial Nauheim baths, partly because they are not administered at the Buxton baths, and partly, as I shall show later on, because I have found that baths of the indifferent thermal water of Buxton containing amongst its mineral ingredients the chlorides of sodium and calcium together with free carbonic acid, are, when used in combination with exercises after the methods of Schott, Oertel, and Zander, capable of producing excellent results.

In the limited time at my disposal it will be impossible to give more than a very short and imperfect survey of the subject. I will not occupy your time with even a brief discussion of those general principles of treatment by drugs, rest, diet and so forth, with which all are so well acquainted, but rather address myself to the subject of cardiac treatment by baths, exercises and climate, which I assume to be the essential factors of these modern methods, whether known by the name "Nauheim Treatment," "Schott Treatment," or any other designation.

I have added climate, which although not generally recognised, is, I believe, not infrequently an important factor in this treatment.

The two factors, however, around which recent interest and discussion have centred, are the balneological and what may be called the gymnastic methods of treatment, and it is with these I shall deal principally in the present paper.

As to the respective importance of the baths and the special exercises used, much difference of opinion has prevailed amongst those who have practised this form of treatment. Some have held that the baths, and others that the exercises, formed the essential and all-sufficient element of success, whilst many have believed that both baths and exercises were necessary as joint parts of the treatment. To arrive at a just estimate of the respective values of these two factors it is needful to study carefully the principles upon which their claims to exert a restorative influence upon chronic heart affections have been based, and to examine cautiously the clinical evidence which has been put forward in support of their curative efficacy.

It will, I think, conduce to a useful discussion of the subject of my paper if I divide it under four heads as follows :—



- (1) The Balneological Treatment of Chronic Heart Disease.
- (2) The Gymnastic or Exercise Treatment.
- (3) The Climatic Treatment.
- (4) Practical Conclusions to be drawn from a study of these methods of Treatment.

(1) THE BALNEOLOGICAL TREATMENT OF CHRONIC HEART DISEASE.

There had always existed a strong prejudice in the minds of medical men against the use of baths in all forms of organic heart disease until Professor Beneke of Marburg and Nauheim began, about the year 1859, to write on the strengthening effects of baths in cardiac cases, and in 1879 Dr. Groedel published a case in which he confirmed the general conclusions of Beneke. Two years later a paper from the pen of Dr. August Schott appeared, and another from that of Dr. Theodor Schott was published in 1880, in which the effects of Nauheim baths upon the heart were described at some length. Since then the literature upon this subject, which has appeared both in England and on the Continent, is considerable, and whilst much of this is of a useful and instructive character, a great deal of it is valueless as contributing to our knowledge of the subject.

*The Baths.*—The baths, when used in this treatment according to the special methods of Schott, are known as Nauheim baths or Effervescent Sool Baths, and their physical and chemical characters have been so often described that it is only necessary to remind you that not only are the natural baths of Nauheim used in the treatment of cardiac disease, but that artificial baths prepared to resemble the Nauheim baths, are now largely used in the treatment in this and other countries. The brothers Schott always held that similar effects to those obtained by the natural Nauheim baths could be obtained from baths artificially made to resemble the former. Sea water from the ocean surrounding our own coasts contains about 3 per cent., or a similar proportion of solid constituents to the waters of Nauheim and is nearly of the same specific gravity. With these facts in view it needed but little ingenuity to devise convenient

methods for the preparation of artificial Nauheim baths, as is proved by recent practice at several of our home resorts.

To save time I will not describe the manner in which these baths are prepared. By using proper proportions of chloride of sodium and chloride of calcium, together with the acid tablets (bisulphate of soda with acid reaction) and packets of powders (bicarbonate of soda) patented by Sandow, of Homburg, these baths can now be prepared conveniently and expeditiously in a suitable ordinary bath.

*The Effects of the Baths.*—Now as to the effects of these baths in cardiac cases. Without admitting all the marvellous results claimed by some, I think it must be conceded that both natural and artificial Nauheim baths do possess powers of influencing the heart and circulation in a way which baths of ordinary water at the same temperature do not. They produce a marked diminution of the area of cardiac dulness, a slowing and strengthening of the pulse, slower and improved respiration, relief of pulmonary, hepatic and pelvic congestions and a generally improved circulation.

The question has been hotly discussed as to whether the diminution of the cardiac dulness indicates a real, or only an apparent shrinkage in the size of the heart. Dr. Schott believes, as also did his brother, in an immediate permanent shrinkage of the organ. This view has been adopted by many others, but the evidence in its favour is not of an altogether convincing character. Whilst doubting any real shrinkage as an immediate effect of a single bath, personally I am prepared to admit a probable diminution in the size of a dilated heart after a series of baths, as part of an improved general condition of the patient.

Have these baths, it may be asked, any real share in producing this improvement, and if so, how, and to what extent? Speaking from my own balneological experience, and taking the evidence of many who have had larger experience in this special treatment, I am of opinion that the baths do share in the work of recuperation, but not in the same degree in which the exercises do. How, and to what extent they act is not very clear.

It would appear, however, that the most potent element in the effervescent sool baths in producing the peculiar effects on the

heart and circulation is the carbonic acid. This view is supported by many, although most observers must admit that the mineral constituents, as well as the temperature, are not without some influence in bringing about the effects on the heart. Dr. Schott and Dr. Groedel of Bad Nauheim believe the effects to be due to an excitation of the cutaneous nerves and blood-vessels brought about by contact with the gaseous and mineral constituents of the bath. "According to this hypothesis," says Dr. Bezly Thorne, "each sensitive nerve branch distributed over the surface that has been immersed, transmits to its parent centre an influence which is centrifugally reflected to the vaso-motor system and to the ganglia which control the action of the heart."

Writing later, on the same subject, Dr. Alexander Morison says, "A maintained peripheral stimulation of the superficial nerves may, by its cumulative and reflex effects upon the central nervous system, also bring about effects in the ganglionic and intrinsic nervous mechanism of the heart, out of proportion to the original stimulus, and thus serve to explain in a measure the comparative durability of results obtained from causes apparently inadequate to effect their purpose."

These are views expressed by men who have had exceptional opportunities of studying the effects of the baths on the heart and circulation, and are worthy of consideration.

Any explanation involving the theory of absorption of either the mineral constituents or the carbonic acid, is, I think, quite untenable. Nor am I inclined to attribute the physiological effects upon the heart (except in small measure) to what I may describe as the mechanical influence upon the heart which attends the vaso-motor dilatation of the cutaneous vessels during the rubefacient action of the bath, that presumably has the effect of relieving the over-filled chambers of the heart. If this were the *modus operandi* one would expect that the capillary resistance being diminished, arterial pressure would be reduced and the heart would beat more quickly. But the testimony seems fairly unanimous that the arterial pressure, on the contrary, is raised and the heart's action is slowed. It seems to me that the excitation of the cardio-inhibitory nerves is the cause of the slowing of the heart's action and an excitation of the cardiac ganglia is the

cause of the improved force and rhythm of the heart, and that this excitation is a reflex nervous influence due to the action of the saline ingredients, but more especially to the carbonic acid contained in the bath. If this be the true physiological explanation, it throws some light on those extremely varying results in the use of the effervescent saline bath which have been obtained by different observers. Is it not conceivable that these reflex nervous influences would be more active, prompt, and decisive in subjects with highly sensitive nervous systems, and hence, in such subjects the changes in the cardiac functions would be more marked? That this is so my general experience of the therapeutical action of baths, exercises, and climate, strongly confirms, and I think that this probably explains in a large measure why those who regularly and frequently prescribe Nauheim baths obtain such apparently better results than those who merely make experimental trials of this treatment. In the former case all sorts of cardiac affections, organic and functional, including a large proportion of highly neurotic patients are treated. In the latter, only cases are selected with pronounced organic lesions, and those with neurotic elements are as far as possible excluded. Hence the extreme diversity in the results. I propose to discuss now the other special factor of treatment, viz. :—

## (2) THE EXERCISES OF GYMNASTIC METHODS.

Whilst to Ling of Stockholm must be conceded the honour of being the first to elaborate a practical system of scientific gymnastics or physical exercises calculated to promote a healthy development of the body and a restorative influence in many diseased conditions, it would appear that Dr. William Stokes, of Dublin, was the first to advocate physical exercise in the treatment of heart disease. His views were published in 1854, in a work entitled "Diseases of the Heart and Aorta." There seems to be some doubt as to whether Dr. Oertel, in advocating hill-climbing in the treatment of heart disease, did so prior to Dr. August Schott's advocacy of regulated gymnastics in cardiac treatment. However this may be, it is undoubtedly due to the work of the brothers August and Theodor Schott that this form

of treatment has claimed in recent years the attention of the medical profession.

It is not necessary in a paper of this kind to enter into any detailed description of the various forms of exercises which are used in this treatment. You are doubtless all conversant with them. A few words only are called for in this connection, but the forms of exercise in general use, differing essentially, as they do, in principle, it is important to have a clear conception of these differences. I am accustomed myself to divide them into five classes as follows :—

(1) *Active Exercises*, in the form of regulated walking and hill-climbing. As we have seen, Dr. William Stokes, and later on Professor Oertel of Munich, were the first to point out the advantages of these forms of exercise in the treatment of suitable cases of cardiac weakness. They consist entirely of voluntary movements on the part of the patient which are completely under his own control, thus differing essentially from the exercises belonging to the other classes.

(2) *Exercises with Resistance*.—These are the special exercises of Dr. Schott. They consist of certain specified and carefully regulated active movements of the limbs and trunk of the body, their particular characteristic being a gentle resistance applied by the hand of the attendant to oppose each movement as it is made by the patient—a resistance just sufficient to be felt by the patient, and applied with a force varying according to the case. The movements recommended by Dr. Schott are nineteen in number and need not be described here.

(3) *Passive Manipulations, or Massage*.—This form of exercise is essentially passive in its nature, and is entirely independent of personal effort on the part of the patient. The exercise is applied by the attendant to the muscles and other tissues of the body by a series of manipulations, including frictions of the surface of the body (*effleurage*), kneading or squeezing the soft tissues (*pétrissage*), and tapping, slapping or hacking the surface (*tapotement*). The manipulations, as a rule, are always applied in the direction of the venous and lymph-streams, that is, *towards* the heart.

(4) *Mechanical Exercises*.—This system was devised by Zander,

and consists of the carrying out of various movements by means of specially constructed machines. Some of these contrivances require active efforts on the part of the patient to move them, and thus answer in some respects to the Schott movements with resistance. Other machines are moved by gas, steam, or electrical motor, and communicate certain movements to the limbs or trunk of the patient, who may receive them passively or resist them actively, as the case may be. Thus the Zander machines are capable of effecting at least three very useful forms of exercises, viz., active movements, passive movements and mechanical impressions.

(5) To the foregoing I would add a fifth class of modified exercises which are found useful in the treatment of cardiac weakness, viz., *Forced Respirations, or Pulmonary Gymnastics*. This is a form of exercise which I have long used with advantage in treating such cases. I am accustomed to recommend patients to perform these exercises two or three times a day, directing that from twenty to sixty deep inspirations should be taken at one exercise, allowing a short interval of rest for a few ordinary respirations after each forced inspiration. The exercises may be carried out indoors, but in the open air is preferable when the weather is favourable.

*Effects of the Exercises.*—In administering therapeutic exercises we are permitted greater latitude as to duration of treatment, in that it may often be extended to half an hour or more according to the condition of the patient, whereas the bath-immersion can rarely exceed fifteen minutes without risk of injury. The effects of the various forms of exercise are much of the same character as those following the baths, but not so rapidly developed. Sir Philip Smyly (*Dublin Journal of Medical Science*, September, 1894) has tersely and broadly stated these effects to be :—

(1) Change in the colour, after twenty minutes or so, from purple blue in the cheeks, hands and feet, before the movements, to red; the blue gradually disappearing from the extremities. (2) The forehead, neck, ears, &c., from a waxy white appearance change to pink. (3) The pulse, before rapid, and the blood-pressure in the arteries low, change to a slow and full pulse and the blood-pressure is raised. (4) The area of dulness over the

heart, before large, is diminished as much as an inch or more in diameter.

These results he says are due to :—

(1) Increased arterial circulation, due to “the diminution of peripheral resistance.” (2) Diminished venous congestion, due to larger quantity of red blood in the arteries. (3) Diminished work for the heart, due to the free circulation of the blood in the arteries.

Now although opinions may differ as to how these physical exercises thus operate in cardiac disease, there can be no doubt whatever that most extraordinary and satisfactory results can be obtained, even in serious cases, by their careful and regulated application. Not only is the colour improved within a few minutes after the commencement of the exercises, but the radial pulse is felt to increase in fulness, and a general sense of warmth and comfort are experienced by the patient.

Observers seem fairly well agreed upon the reality of the various phenomena mentioned, excepting the alleged shrinkage of the heart in connection with the reduced area of cardiac dulness. There seems to be no doubt that, as in the case of the baths, we have presented a diminishment of the area of cardiac dulness which varies in extent according to the case. The question resolves itself into whether this is due to a definite contraction and shrinkage in the *size* of the heart, or whether it is simply due to alteration in the *position* of the organ.

Dr. Schott, Dr. Bezly Thorne, and many others, whilst not denying some change of position, hold that in the majority of cases there is an undoubted diminution in the size of the heart.

On the other hand there are many, including Dr. Groedel of Nauheim, who differ from this view. As for my own personal opinion, whilst I am prepared to admit the probability of a *gradual* but *limited* decrease in the size of a dilated heart as part of the improved nutritive changes in the general organism brought about in a very large measure by the exercises, I do not think the evidence at present adduced justifies more than this.

It is true that in a paper recently published, Dr. Schott (*Deutsche Med. Wochenschrift*, November 14, 1897, p. 220) gives an account of some investigations undertaken with a view to ascer-

taining by means of radiography the amount of alleged shrinkage. Professor Newton Heineman, of New York, assisted him to take the radiograms in two young subjects aged respectively  $8\frac{1}{2}$  years and 14 years. After submitting the younger child to the resistance movements, a difference was shown of rather under one centimetre at the level of the third rib, and of rather more than one centimetre at the level of the fourth rib. The elder child was submitted to a bath which produced an apparent shrinkage of 0.8 centimetre; but these results do not prove any real shrinkage. The difference in size shown by the radiograms may be altogether due to a *decrease of perspective area*, arising simply from change of position by the more vigorously acting heart. The point is really one which requires further careful investigation, and we shall do well if, in the meantime, we avoid too dogmatic conclusions on either one side or the other.

This brings me to the question of how far other factors may enter into the physical treatment of cardiac disease. I think all will agree that in the production of the remarkable beneficial results in cases of heart failure, of which we have all heard, and many of which some of us have seen, it would be unwise and unscientific to overlook the influence of other potent factors, besides the special baths and exercises, such as climate and diet as well as the not to be neglected psychical influences of expectancy, hope, and allayed anxiety and fear. These must all be taken into account. Nor will the unprejudiced and experienced physician who makes use of these methods, no matter how successfully, be inclined to forget or discard the many well-proved remedies which exist in the form of drugs. Even in the light of adjuncts merely, they find a useful and very important place in the treatment. The importance of this part of the subject demands a few special remarks on :—

### (3) THE CLIMATIC FACTOR.

In the influence of climate we possess, as I believe, a powerful factor in the treatment of cardiac failure, and yet it is one which has not received the recognition it deserves. It must of course be admitted that outdoor exercise is an almost inseparable element of climatic treatment, and therefore entitled to be credited with



much of the benefit resulting from change of air. Climate, however, is capable of exerting certain direct effects in cardiac disease quite apart from exercises or other circumstances, hence it is of great importance to carefully study such influences.

In making choice of a climatic resort for cases of cardiac or vascular weakness, it is a good rule to cautiously try at first the bracing air of a sea-level resort, then the dry bracing air of a slightly elevated region, which, if borne well, may gradually be changed for higher altitudes. A point of great importance is the condition of the skin, kidneys, liver and lungs, at the time of the proposed climatic change, as also is the question of the probable effects which the change of air is likely to exert on these organs. These are matters too often overlooked by medical practitioners sending cases to health resorts, and I cannot too strongly urge the grave risks involved in their neglect.

In this connection arises the important consideration of other elements of climate besides altitude, such as purity of air, temperature, direction and force of prevailing winds, rainfall, humidity, soil and subsoil, vegetation, &c. Indeed the climatic factor is capable of exerting, through its influence on the general process of nutrition, some of the effects which are produced by the aerated sool baths and the regulated exercises. The effects are, however, more irregular and uncertain. How these effects on the heart and circulation are brought about by climatic influences is a question presenting more difficulties than in the case of baths and exercises. We can comprehend the action of climates of varying altitudes where different degrees of atmospheric pressure influence the blood-circulation. We can also to some extent understand the influence of high and low temperatures, as also the effects of humidity, winds, and other features of climate upon the heart and vascular system. But the results are often so different in apparently similar cases of cardiac failure, that we are driven to the conclusion that other subtle and at present unrecognised influences are at work which, if understood, would explain these diverse actions of climate. Nevertheless properly and discriminately applied, we have in the

climatic factor an extremely valuable means of treating many forms of heart disease.

Indeed my own experience during many years' practice in an upland district, varying from 1,000 to 2,000 feet above sea-level, has been of a very satisfactory and encouraging nature. I have been accustomed during those years to observe frequently improvements quite as remarkable and satisfactory as those which have been obtained in late years by the special methods of Schott, *without the use of baths*, and mainly as a result of climatic influences and gentle and carefully regulated outdoor walking exercise, making use of the various degrees of hill-climbing permitted by the surrounding country. Let me cite the following case in illustration.

In August, 1889, I was called to see a lady, aged 60, who had been sent to me from London suffering from dilatation of heart and cardiac asthma. For several weeks previously any slight exertion or attempt to lie down brought on an attack of severe dyspnoea. When I arrived she was in a very alarming condition after the railway journey. Heart's action was exceedingly weak, quick and irregular, pulse at wrist scarcely felt and could not be counted. I administered a subcutaneous injection of gr.  $\frac{1}{2}$  morph. sulph. and gr.  $\frac{1}{160}$  of atropine, and prescribed tinct. strophanthi  $\mathfrak{m}$  v., sp. am. arom.  $\mathfrak{m}$  xv., sp. chlorof.  $\mathfrak{m}$  x., inf. gent.  $\frac{1}{2}$  oz., every four hours. Next morning patient was much better, and on the third day the pulse could be counted—66—and the colour and breathing were greatly improved. Two days later severe dyspnoea returned and the subcutaneous injection was repeated and patient had a good night. I then prescribed a pill of ferri. redacti., gr. i., quiniæ sulph., grs. ii., pulv. digitalis, gr. i., morph. sulph., gr.  $\frac{1}{24}$ , three times a day. A day or two later she was so much better as to be able to walk a little. I now ordered gentle *pétrissage* of the extremities, back, and chest; at the same time I advised gentle open-air exercise, at first on the level and then on rising ground, gradually increasing the ascents. The patient was under treatment two months, and during the second month had so far recovered as to be able to walk up and down stairs with ease and comfort.

I do not wish to disparage the proper and careful use of

baths, together with well-regulated active and passive exercises, either after the methods of Ling, Schott and Zander, or in the form of massage. I cannot but emphasise, however, the many advantages of the treatment of a large class of cardiac affections by the combined climatic and natural exercise method, particularly where baths are either contra-indicated or not procurable.

Another factor not sufficiently recognised in the physical methods of treating heart disease is the *diet*. This will be so evident to the thoughtful and observant practitioner as to dispense with any necessity in this short paper of saying anything on my part either to describe or explain the part played by a well-considered and regulated dietary in cardiac treatment.

#### (4) PRACTICAL CONCLUSIONS TO BE DRAWN FROM THESE METHODS OF TREATMENT.

In the foregoing summary of the physical methods of treating cardiac disease it will be seen that whilst the special baths undoubtedly produce well-marked physiological and curative effects upon the heart and vascular system, they do not exert so powerful an influence as the active and passive exercises. This being so, it may be fairly asked : (1) Is the balneological factor an absolutely necessary part of the treatment ? (2) Is it possible to obtain equally good results by the use of baths of plain water or other mineral waters, provided regulated exercise be used at the same time ? In reply to the first question I should say that the baths are not absolutely essential where the exercises are admissible. They may, however, be used as an adjunct in many cases with much advantage. As to the second question, it is more difficult to obtain for it a satisfactory answer. It is thought by some that equally good results can be obtained by the use of warm sulphur baths, brine baths, alkaline baths, indifferent thermal baths and even plain water baths, in conjunction with regulated exercise. At a discussion upon this subject at the meeting of the British Medical Association held at Carlisle, Dr. Saundby expressed surprise that a gentleman from Harrogate should have advanced such a claim for sulphur baths. I think, however, that those who have practical knowledge of general balneological methods will not be so sceptical on this point.

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During a long experience it has been a frequent and almost daily observation with me to see cardiac affections, complicating cases of gout, rheumatism and other diseases, vastly improved during a course of indifferent thermal water baths, and I do not doubt similar experience by others in using various kinds of mineral baths.

I have had an opportunity during the past week of examining a patient who came under my care eight years ago suffering from severe sub-acute gout. His doctor then wrote to say that he had suffered from "mitral disease" for ten or fifteen years. There was a loud systolic murmur at the apex. He was troubled with palpitation and shortness of breath on climbing a hill or going upstairs quickly. I put him through a course of baths for the gout, which was speedily cured, but a marked improvement in the cardiac condition was also noticed. This patient returned annually for a course of treatment, and in 1894 the heart had so much improved that the murmur was not more than half as loud as five years before, and he was able to walk up steep hills with ease and comfort. On his return home to Dublin after this visit the improvement in the cardiac condition was corroborated by Sir John Banks, who was conversant with the previous history of the case. This improvement has been maintained, and the patient, who is now over 78 years of age, daily takes his four or six miles' walk, including some very steep ascents, without the slightest discomfort. The baths used in this case consisted of the Buxton thermal water, at temperatures varying from 98° to 82° F., of eight to ten minutes' duration, and given about four times a week. The water contains only some thirty grains of mineral constituents, chiefly lime, magnesium, sodium and potassium salts, in the gallon, but it also contains gases estimated by different analysts at 4.1 to 15.66 cubic inches of carbonic acid and 6.1 to 20.6 cubic inches of nitrogen in the gallon. Yet that these baths, together with hill-climbing, exercises and change of air, contributed to the remarkable restoration of the diseased organ in this case, I cannot for a moment doubt.

All baths, it must be remembered, produce their effects almost invariably, not by absorption of their mineral and gaseous constituents, but by exercising reflex influences through the cutaneous

nerves and blood-vessels. These reflex effects may be variously modified according to the chemical constitution of the water and the individual peculiarities of the patient, but after all they possess much in common, whatever the peculiar characters of the water may be.

The subject of the physiological and therapeutical effects of the various natural mineral water baths upon the heart and circulation has been grievously overlooked and neglected by bath practitioners. This neglect is due to two causes:—In the first place the attention of such observers is mainly concerned in the effects of the particular baths upon particular diseases, such as gout, rheumatism and skin affections, for the cure of which the baths have earned reputation. In the second place, it is due to an old and widespread prejudice as to the injurious effects of mineral baths in cardiac disease. I venture, however, to express an opinion that if the experiences and observations of medical men who have practised bath-treatment at our various resorts for many years could be gathered together and carefully analysed, it would be found that very many cases of heart disease are benefited by the routine practice of baths, exercise, and climate, without (if I may be permitted to say so) intending it, whilst undergoing treatment for other maladies. And, if it has been possible to obtain these beneficial results in cardiac troubles as accidental consequences of treatment administered for other purposes, how much greater might be the result if cardiac affections were more generally treated with definite and set purpose by the bath and other resources available at many of our home-health resorts? I have given two or three instances in my own experience of well-marked organic heart disease benefited by these methods before the Nauheim treatment was known in this country, and I have no doubt others could adduce similar testimony.

There is one matter in connection with the use of baths in cardiac treatment which has received little attention, if any, hitherto, but which deserves very serious consideration. I refer to the *cumulative effects* of what I am accustomed to designate the higher thermal treatment. It is a common observation in the practice of balneology to note a certain depressant action of

baths, particularly when administered at temperatures exceeding 90° F., which invariably follows the primary stimulant and excitant effects of the bath. These depressant effects would appear to be cumulative, so that it is not uncommon to hear even healthy persons, who have been indulging in a series of mineral baths, complain of, to them, an unaccountable sense of weakness and depression which was not felt during the earlier days of bathing. This condition in patients suffering from various forms of chronic disease is sometimes most marked, and has been particularly noticed by me in persons afflicted with cardiac failure and general and local nutritive disorders. It is thought by some that this depressant effect of warm baths does not follow in the same way after Nauheim baths. This is, I believe, a mistake. I had under my care, not long since, an elderly lady suffering from dilatation associated with mitral incompetence and aortic obstruction. She had paid two or three visits to Nauheim during the previous eighteen months, undergoing a course of the baths and exercises, each time by direction of Dr. Schott. When I saw her, about two weeks after last leaving Nauheim, there was considerable difficulty of breathing on exertion, and the patient was unable to walk upstairs or take even short walking exercise. She stated that she had felt better during the treatment, but latterly she had suffered from great muscular weakness and general nervous depression. The action of the heart was very weak and excitable, the slightest exertion or excitement producing palpitation, irregular cardiac action, and dyspnoea. In this case we have an illustration of what I have been saying. The baths had resulted in an accumulated condition of depression, which had left the last state of the heart worse than the first. It is true that these baths retard the action of the heart and raise the blood-pressure, and that this is followed generally by a resumption of its former rate and pressure. If, however, the accumulated depressant influence of hot baths manifests itself, the heart is longer in recovering its average speed and tone. Hence conditions of cardiac weakness previously existing may be exaggerated, or even others, before absent, may be developed. Such considerations as these should, I think, lead to a more extended use of exercises *with climate alone* in the treatment of cardiac affections.

I believe that much of the success which has attended the treatment by baths and exercises at Nauheim and elsewhere has been due in no small measure to accessory conditions of change of air, change of diet, separation from social drawbacks to treatment, inspiration of hope, and so forth. Hence, although, under proper regulation, the treatment by baths, exercise and fresh air may be carried out with more or less success at the patient's own residence, he will be much more likely to secure these and other necessary features of the treatment by undergoing it at some suitable sea-side or inland health resort.

The precautions as to the choice of a climate already mentioned, require most careful consideration. After this comes the matter of supervision and actual treatment during the patient's sojourn at the selected resort. Upon the exercises, baths, diet, &c., being properly carried out, the success or failure of the treatment depends. It is a hopeful sign of the future extended usefulness of this treatment that medical men at our home resorts are giving special study and attention to the physical methods of treating heart disease, and that it is possible now to send such cases to English resorts confident of skilled and careful medical supervision.

Before concluding, I desire to say a few words about the use of unqualified attendants in the carrying out of this treatment. The extent to which this custom has prevailed latterly, has, in my opinion, brought into prominence what is fast growing into a gigantic and monstrous evil—an evil which I am persuaded is fraught with grave danger to the public and serious damage to the profession. At all our health resorts numerous sign-boards and brass plates give evidence to the extent of this evil. Nine-tenths of these persons claiming to be qualified to administer massage, baths and exercises, in the treatment of cardiac and other diseases, are totally ignorant of the most elementary knowledge of physical science and quite unfit to be intrusted with a case of heart disease, and any medical man employing or otherwise encouraging such persons incurs a serious responsibility.

The medical attendant should, I think, whenever possible, himself administer or superintend all exercise of the nature of

resistance movements. When this is not possible, he should only employ a highly trained and trusty attendant who will carry out his instructions with care and fidelity. Failing these two conditions, I do not hesitate to say that it is better to discard such form of treatment altogether, and to trust entirely to regulated walking exercise, pure fresh air, suitable diet and drug tonics.

In conclusion, whilst it has been my desire to accord to the special methods of Dr. Schott a true and just estimate of their value, I would express a hope that I may have succeeded in proving that the fundamental principles of the so-called Nauheim treatment of heart disease, although much obscured, have long been recognised and practised in this country, and that it is possible to obtain results, perhaps equally striking, without strict resort to the special Nauheim methods.

To me there appears little or nothing which is really new in this treatment, but the methodical and systematic application, on more special and extended lines, of principles already known and practised by many in a disconnected and indefinite fashion. I hope that the recent revival of interest in the profession of this country in these methods will lead to the wider adoption and practical application on more definite lines of the principles referred to.

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#### DISCUSSION.

Dr. GEORGE OLIVER (Harrogate) said : Dr. Hyde's comprehensive and well-balanced summary of the leading points to be discussed provides each speaker with an ample choice of a topic to suit his particular experience. I should like to say a few words on the physiological effects of the baths and exercises which have of late years been so extensively employed in the treatment of heart disease, and to refer to their clinical bearings. Perhaps my remarks may be accepted as a little physiological introduction to the strictly clinical discussion, and may on the one hand provide some sort of a reason for the clinical faith of many of us, and on the other may furnish something to think over by those who may be doubtful of the clinical efficacy of



these procedures. I will only mention such matters of fact as have come under my observation. I will therefore abstain from discussing purely theoretical questions.

I will first of all refer to three or four leading physiological effects of the baths and resistive exercises which I have observed in normal man; and then I will briefly handle another form of exercise which I have also found of some practical value in the treatment of circulatory affections—not necessarily cardiac. First, then, as to the baths and resistive exercises. I will adduce a few facts showing that certain alterations are effected by these procedures in the peripheral circulation, in the blood itself, in the arterial pressure and in the pulse rate.

In the first place I will refer to the evidence of transfer of a considerable volume of blood to the systemic periphery. As you know, many observers have believed this to be highly probable. I am persuaded there is definite evidence in support of it. Some two years ago it occurred to me that some light might be thrown on this question by a simple method of measuring the volume of a limb by the displacement of water. I then made a number of observations before and after baths and exercises in the following manner. A line was drawn by aniline round the arm an inch or so above the elbow, and the limb was inserted into a glass cylinder exactly filled with water, and was then withdrawn when the water touched the line. The amount of overflow was then carefully measured. The results showed that the volume of the limb so measured was increased by simple warm baths, by saline and carbonic acid baths, and by the exercises. But a difference was observed, especially in regard to the duration of the enlargement; for it was quite transitory after simple warm baths, and was much more prolonged after the medicated baths and after the exercises. It amounted to as much as from one to two ounces after the exercises. Now what is the cause of this enlargement? I observed that it followed all forms of contraction of the muscles, however induced—whether voluntary and resisted, or voluntary and free, or whether it were peripherally excited by Faradism. Now if the swelling is caused by the accession of blood this fact agrees perfectly with the results of all experimentation on animals in regard to the effects of

muscular contraction, for they all support the view that muscles after contraction become full of blood, and this would necessarily increase the volume of the muscles. I therefore conclude that the augmented volume of the systemic parts of the body which immediately follows the resistive exercises and baths is the direct measurement of a large accession of blood to those parts. I should here refer to an interesting observation of Sadler, which shows that when the muscular contraction is resisted it diverts much more blood than when it is free to shorten the muscles. From this it would seem that resistive exercises are well devised on purely physiological grounds for the purpose of drawing into and through the periphery of the circulation considerably more blood than can be induced to flow there by free and ordinary muscular contraction.

The next physiological effect of the exercises relates to the blood itself. A large number of observations on the blood, made with my cytometer tube, before and after all forms of muscular contraction, show that a marked and immediate rise in the percentage of the corpuscles is an invariable effect of exercise. All the evidence I have collected points to the conclusion that this is a case of rapid fluid transfer from the blood through the capillary wall into the substance of the muscles, and into the lymphatic spaces. In this way fluid is withdrawn for a time from the circulation, and the volume of the blood becomes reduced and the blood itself therefore becomes more concentrated.

The third physiological effect of the exercises I will mention refers to the arterial blood pressure. Most observers are pretty well agreed that active exercise raises that pressure; and Mr. Leonard Hill has lately shown this to be the case. But some doubt has always existed as to whether the resistive exercises, which do not disturb the breathing, have the same effect; some observers holding that the arterial pressure is raised, and others that it is lowered by them, and sphygmograms have been repeatedly appealed to as affording automatic evidence of each contention. The latest and certainly the most trustworthy contribution on this point is that of Lauder Brunton and Tunnicliffe, founded on the application of a graphic method (Mosso's) to man. These observers show "that during the exercise itself the

pressure first rises above the normal, but begins to fall even during the continuance of the exercise, continues to fall, so that at the end of the exercise it has usually reached the normal. After the cessation of the exercise the pressure continues to fall. The pressure after the exercise may remain subnormal for half an hour or longer; after the expiration of this time it gradually rises again to its initial height."<sup>1</sup> My own observations are much in accord with these conclusions; but they likewise show that the resistive exercises are not the only forms of exercise followed by a lowering of the arterial blood pressure. It would seem that this result is induced by any form of exercise that merely dilates the arterioles by slow and equable muscular contraction, and does not in any way disturb the breathing.

Fourthly, there is the well-known slowing of the pulse, which, though not invariable, is an important physiological effect.

It is obvious that these data form a fairly promising foundation for the clinical application of these strictly physiological modes of treatment of certain circulatory affections, in which now so many trustworthy observers have recorded their favourable experience. The dilatation of the arterioles through the vast systemic area should aspirate, as it were, into the capacious periphery of the circulation a very considerable volume of blood—perhaps a total surcharge of from ten to twenty ounces is a moderate estimate. And surely such a large diversion of blood drawn from somewhere, and probably chiefly from the loaded areas (the dilated chambers of the heart and the weak venous side of the circulation), should prove remedial. The withdrawal of the normal inhibitive constriction of the arterioles by these simple procedures must of course reduce the *vis a fronte* of an embarrassed and dilated heart and lessen the intra-cardiac strain.

Lauder Brunton and Tunnicliffe, in the article just referred to, make a pertinent suggestion that muscular contraction may generate some material endowed with a similar action to that of nitro-glycerine on the arterioles. They say: "The fact that even during the exercises, after they have been continued for

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<sup>1</sup> *Brit. Med. Journ.*, vol. ii., 1897, p. 1075.

some time, the pressure returns to its normal level, and may even sink below it, seems to point to the conclusion that by the contraction of a muscle some substance is produced which exerts a vaso-dilating influence, and as the amount of this substance increases its net result is to overcome the diminution of the arterial calibre which is mechanically produced by the shortening of the contracting muscles."<sup>1</sup> By the side of this suggestion perhaps I should mention that in all my observations with the arteriometer on the effects of exercise and of the vaso-dilators, the results of which were published some few years ago, I was much struck with a fact common to both—namely, a reversed postural measurement of the pulse—a fact which I knew could only be explained on the ground of vaso-dilatation. I have found that this effect is invariable after the resistive exercises. However, whether muscular contraction does or does not generate a vaso-dilating product, the fact remains that it causes exactly the same peripheral effect on the arterioles as is excited by nitro-glycerine, erythrol tetra-nitrate, or other vaso-dilator.

Then, again, the reduction of the volume of the circulating fluid, to which my observations of the blood point as a result of the exercises, may be another factor in disposing to the lowering of arterial pressure and to the easing of cardiac work. On this point I will remind you of the important observations of Grawitz, who showed that when cardiac compensation is lost the blood becomes thin, the percentages of the corpuscles and of the dry residue of the blood and of the serum fall, and when that compensation is restored the blood becomes richer in corpuscles and in dry residue. In other words, in loss of compensation the water in the blood increases, and we get oligæmia or spanæmia, and a lowering of the specific gravity of the blood, and on the return of compensation the blood becomes less and less spanæmic.

The resistive exercises may therefore favour compensation by relieving the stress of blood in weak areas (heart chambers and veins), and in reducing the spanæmia, which is known to characterise loss of compensation. It is perhaps doubtful if we

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<sup>1</sup> *Op. cit.*

are acquainted with any *one* remedy which combines the central and peripheral effects of baths and exercises. To produce a comparable result it would seem that we must unite the vagus stimulation of one of the digitalis group with the vaso-relaxation of one of the vaso-dilators.

I will now devote a few words to the consideration of another form of exercise which I have found of considerable service in the treatment of circulatory affections. Three years ago Dr. Edward Blake told me that he had obtained some strikingly good results from putting his cardiac cases through a course of respiratory exercises. This led me to study the effect of forced respiration in different cases. Just now I will only mention the practical outcome of my results in the cases in which the normal splanchnic control over gravity is impaired or lost. Clinically such cases are quite easily recognised by the use of the arteriometer, and are more common in women than in men, because the vaso-motor mechanism of women is more delicate, and is therefore more easily exhausted. In such cases in the erect position of the body (whether sitting or standing) the blood drains into the capacious splanchnic veins through the unrestrained force of gravity, and then the calibre of the radial vessels is reduced. But in the recumbent posture the downward drain ceases, because then gravity can no longer operate, and the radial vessels enlarge and become normal in calibre. This is the exact contrary to what obtains in health, when gravity is compensated for by vaso-splanchnic tone. When such a condition of the circulation is persistently present it may be aptly termed vaso-motor or splanchnic inadequacy or paralysis.

In all cases of this kind I found that a series of the respiratory exercises I adopted restored the radial calibration to the normal formula ; and when the exercises were resorted to frequently and for some weeks or months the vaso-motor tone was as a rule re-established, with great improvement of the general health. The cases hitherto treated were free from heart disease. The method consisted in the patient, in the recumbent posture, executing a series of from six to twelve slow, deep inspirations, with firm contraction of the muscles of the abdominal parietes—the contraction being also maintained during slow forced expiration.

This form of respiratory gymnastics empties the hepatic and other abdominal veins, increases the flow of venous blood to the heart, and induces a stronger stroke of the heart—in a word, it transfers the excess of blood on the weak venous side of the circulation to the arterial side, and thus makes it serviceable in the physiological work of the organism. The results of these observations impressed me strongly that we had in the “respiratory pump” a valuable means of correcting or counteracting inadequacy or paralysis of the splanchnic nerves, which in health compensate for the effects of gravity on the circulation when the body is in an erect position. I therefore ventured to refer to this subject in June, 1896,<sup>1</sup> and my subsequent experience has amply confirmed what I then published. Moreover, since that date Mr. Leonard Hill and Mr. Harold Barnard have demonstrated the same fact by a series of experiments on animals, and you will find a most instructive paper of theirs referring to “The Action of the Respiratory Pump” in the *Journal of Physiology* for 1897 (vol. xxi., p. 323), which every practical physician should study. These observers have conclusively shown that the action of the respiratory pump “forms a second line of defence against the influence of the force of gravity in conditions where the vaso-motor mechanism is weakened or paralysed.”<sup>2</sup>

Dr. DOUGLAS KERR (Bath) said: I feel sure that you will agree with me that we are much indebted to Dr. Hyde for the very admirable paper he has just read us on the Nauheim treatment. It is a special province of this Society, composed as it is of those members of the profession most closely connected with and deeply interested in Balneology, to discuss such a subject, and I am convinced that Dr. Hyde's paper, and the discussion which will follow, will do much to clear the ground and place this treatment on a sounder basis with the profession at large. For the last few years this treatment has been the subject of considerable controversy, it has gone through the usual course of new discoveries, it has been unduly extolled and equally

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<sup>1</sup> The Croonian Lectures, *The Lancet*, vol. i., 1896.

<sup>2</sup> *Op. cit.*, p. 234.

unfairly derided, and has now settled down to a medium place of usefulness as an adjunct to the thermal treatment practised at our various spas in a limited number of carefully selected cases. The carbonic acid gas used in the baths can be generated in several ways; the most convenient and trustworthy mode is by powders and tablets prepared by Sandow of Homburg. It is essential that both the strength and temperature of any given bath are accurately known and maintained throughout, so that any means of carbonising the baths which renders this impossible is useless. The treatment has been most successfully employed in cases of chronic heart disease characterised by a dilated condition of the organ, with a rapid feeble pulse, which, at times, may be irregular or intermittent, and more especially where these conditions are functional rather than structural in origin. In many of the graver forms of heart disease the treatment is counter-indicated, and nothing but discredit can result from its too promiscuous use in cases in which it is not adapted. There is a tendency in England to rely more especially on the baths and to relegate the exercises to a subsidiary position or to neglect them altogether, which seems to me wrong. Since Oertel's first attempt at systematic exercises as a treatment for the heart, a great deal of scientific experiment has been devoted to ascertaining the effect of muscular contraction upon the circulation. Gaskell demonstrated the facts (1) that more blood passes through a muscle during contraction than when at rest; (2) that the flow is greatest just after the contraction has ceased. Ludwig proved that when contraction and shortening are resisted more blood passes through a muscle than when contraction is unresisted and produces shortening. Marey's experiments show that during muscular exercises the blood pressure is raised, but falls below the normal when the exertion is over. Drs. Lauder Brunton and Tunnicliffe, giving the results of their experiments in the *British Medical Journal* for October 16, 1897, deal exhaustively with this subject, and place the advantage of the exercises in a scientific position which it is impossible to assail. I have had an opportunity of watching the treatment in a fairly large number of cases, and can confidently report that the results have fully justified my expectations. I would wish to emphasise, however,

the fact that the cases have been very carefully selected, and I feel sure that unless this rule of careful selection is rigidly adhered to, the treatment will speedily fall into unmerited disrepute.

Dr. EWART felt that the Society was under obligation to Dr. Hyde for having introduced a most important subject for discussion in a practical and interesting form, and no less were they indebted to him for having given the Society the opportunity of listening to the valuable demonstration put before them by Dr. Oliver. Thanks to the latter, the Fellows would carry away from this meeting much clearer ideas as to the mechanism of relief afforded by the treatment. Although it was to be regretted that Dr. Oliver's views could not, within the time at his disposal, have been put forward at still greater length, the original practical method by which he had illustrated them was a valuable help to the thorough appreciation of the theoretical points involved. He did not desire to speak at any length on points already familiar to most. The Society was probably less interested in technical clinical details than in the main questions of balnear treatment, hygiene, and climate. It was in that belief that he had accepted the honour of joining in the discussion, and broken the rule of silence which he had hitherto preserved in connection with this subject. Lest this silence should be misinterpreted on the part of one who had devoted considerable attention to cardiac studies, he would say that when the new treatment, which they owe to their *confrères* in Nauheim, was brought forward he felt that his humble efforts had only earned for him a seat at the back of the audience. In that position he had been enabled, however, to think, to study, and thankfully to avail himself of the new doctrine.

The ideas as to what was good for the heart had in some respects been completely reversed, and we had had to change our treatment into directions totally opposite to those previously followed. The teachings of physiology had long been available but had remained unheeded, like the voice in the desert. We are now, thanks to Nauheim, working on physiological lines ; and the importance of the change could hardly be over-estimated. It might be said of the speciality devoted to the treatment of heart



disease that it is not a limited speciality. Its results immediately concern the economy in general. Sound treatment of the heart not only benefits the entire body through its effects on the circulation, but indicates also the treatment which would be of service elsewhere. Therapeutics of the heart thus acquire almost paramount importance as a guide in general therapeutics.

He would not detain the Society with the results which he had obtained in the hospital and outside. The demonstrable advantages of the treatment when properly conducted have been sufficiently dwelt upon. As regards the heart itself, the amount of obvious alteration in it must bear some proportion to any pre-existing abnormality. It would be impossible to make a normal heart more normal in size than it is; and unless we determine the size of the dilated heart sufficiently early in the treatment we may not get a fair view of the change which is effected. Want of attention to these points may perhaps explain a great deal of the scepticism which has prevailed.

He would have liked to have dwelt upon climate in heart disease as well as upon the effects of baths—questions which belong to the scope of the Society and of the paper, but in view of the number of expected contributions to the discussion he would not further trespass upon the patience of the Fellows.

Dr. BEZLY THORNE, at the outset of his remarks, referred to the opinion which Dr. Hyde had expressed in his paper to the effect that the remedial movements are more to be relied upon than the baths, and said that for the first year during which he had practised the Schott treatment he had administered movements only, and that during the following year, and subsequently, he had made use of both movements and baths. The results, he declared, left no doubt in his mind that Dr. Schott was correct in pronouncing the baths to be the more effectual of the two methods and the more prominent in their results, although in the majority of cases these two factors in the treatment should be used in conjunction, as they are not in all subjects identical as regards their effects. He was not able to agree with the view that the shrinkage of the cardiac area, which had been reported by so many observers, is apparent only, or due either to overlapping of an overloaded lung or to the heart swinging inwards

from a fixed centre. Were such the case the receding apex would be found to descend; whereas, when it did change, as to a vertical position it is found to descend while it migrates towards the middle line. Dr. Thorne stated that he had received a letter from Dr. Schott, saying he felt much interested in the discussion of that evening, and had sent him some radiograms which he had recently had made and which were evidence, he thought, of undoubted shrinkage in the size of the heart after treatment. These radiograms Dr. Thorne submitted to the meeting. Dr. Thorne cordially agreed with the remarks that had been made by Dr. Hyde on the employment of inexperienced assistants for the administration of the treatment, which, he said, could not be too severely reprobated. Such persons should be clinically, as well as theoretically, instructed, and then act under careful medical supervision, if for no other reason because the baths and exercises are capable of exerting more rapidly induced and powerful influences on the organs and circulation than digitalis and other potent drugs, which can only be lawfully employed under the direction of duly qualified persons.

Dr. LEONARD WILLIAMS (late of Sidmouth, now of London) deprecated the method of demonstrating results by those diagrams with which every one now associated the Nauheim treatment. He did not believe that the best percussor ever born could vouch for the accuracy of differences of a half, or a quarter, or even an eighth of an inch on which many of these diagrams depended. Moreover, the reduction of an enlarged area of cardiac dulness was not an end in itself, for if the enlargement was part of the compensatory process, then no good but an infinity of harm would ensue if it were interfered with.

The cases which he believed to be unsuitable for the treatment were those in which compensation was either quite recent or had not yet been established. The older the case the more suited was it to be dealt with by baths and exercises. Most chronic cardiac cases took too little exercise, ate either too much or too frequently, and a great many took more alcohol than was quite necessary. When this state of matters was allowed to go on for an indefinite time the original compensatory apparatus

became threatened on account of the impurity of the blood stream.

If such a person were sent to Nauheim, he would certainly improve, not because there was any magic in the waters, but because he was subjected to a rational system which tended to purify his blood stream and strengthen the cardiac muscle. He would improve equally well, now that Dr. Schott had taught us his system, at Harrogate, Bath, Sidmouth, or anywhere else in this country, where the system was adopted. In his (the speaker's) opinion, these methods had no specific effects on the heart; their success was due to a general improvement, the result of rational principles of treatment, in which the heart shared.

Dr. ALEXANDER MORISON stated that he found himself so much in accord with the reader of the paper that he had little to add to the discussion which had already taken place. He considered it was too late in the day to enquire whether baths and exercises had any influence on cardiac disorders; they might be injurious and they might be beneficial according to the skill and judgment of those that administered them. He agreed with August Schott that baths were to be regarded as a minor form of gymnastics, and their prescription was frequently advisable when the more strenuous effort involved in exercises was not advisable. He considered that the erroneous estimates of cardiac shrinkage originally published, while they attracted the attention of the profession, had unduly prejudiced it against this method of treatment. He did not regard it by any means as a panacea, but in appropriate cases he considered it materially increased the power of the physician to cope with cardiac failure.

Dr. HERRINGHAM said that his practice of this method had been confined to poor patients in hospital. In these cases, observed with the greatest care of which he was capable, he had never been able to satisfy himself that either the patient's general condition or his individual symptoms were modified by exercises or baths. In particular no uniform effect was produced upon either the tension or rate of the pulse; and no appreciable diminution was brought about in the size of the heart. He thought this discrepancy between his own practice and that of those who had already spoken was easily explained. He himself

dealt with a class in which heart disease did not yield to strict diet and regular exercise. Previous speakers had been dealing with the rich and gouty, in whom the name "heart disease" meant a different complaint. The observations of Dr. Oliver showed how the treatment worked. They showed a considerable transference of blood to the external parts. This blood must come from some other parts, and since we were familiar with the fact that in health a continual see-saw was maintained between the blood vessels of the surface and those of the splanchnic system, it seemed probable that the same effect had followed in this case too, and that in filling the vessels of the surface the treatment emptied and relieved those of the viscera. The beneficial effects were then explicable as due to improvement in the action of these viscera. He expressly wished to point out that no reliance could be placed upon skiagrams such as those exhibited for Dr. Schott. Having himself taken such skiagrams he was quite certain that alterations in position, impossible to avoid or appreciate, could cause differences in the skiagram larger even than those of Dr. Schott. No machinery could put a child after exercise in identically the same position which he occupied when the first skiagram was taken, and the very slightest alteration in any direction would produce a large difference in the shadow of the heart.

Dr. WETHERED thanked the Secretary for his invitation to him to take part in the discussion that evening, but as the hour was late he would occupy the time of the meeting for a few minutes only. After observing cases at Nauheim and in England, he believed that the treatment of chronic heart complaints by the Schott-Nauheim methods was a most useful one, provided that the cases were carefully selected and watched during the course of treatment. The cases he (Dr. Wethered) had found most suitable for this treatment were those of simple dilatation, or those in which there was a strong neurotic element. He considered it most important that the number of beats as counted at the wrist should be compared with the number of heart beats as heard by auscultation. This was especially to be observed when the cardiac rhythm was irregular. He had seen cases in which the number of beats felt at the wrist were apparently

decreased after the baths or exercises, but on comparing the number with the heart beats heard on auscultation, the number of the latter was found to be considerably increased—there were a number of small beats which did not reach the wrist. He quite agreed with those speakers who deprecated the frequent marking out, by red and blue lines, the apparent decrease of the cardiac area of dulness before and after the exercises—such a proceeding might greatly impress the patient, but its clinical value had been much over-estimated.

Mr. HAVELL (Felixstowe) said he hoped that one result of this discussion would be that the limitations of the bath and exercise treatment might be more clearly defined. It would be as rational to put all cases of "heart disease" under this treatment as it would be to put them all on digitalis! For his part, he was inclined to think there was a fairly well defined group of cases in which the bath and exercise treatment was a valuable adjunct to our resources. He referred cases of heart failure secondary to atheroma or sclerosis. These cases fell naturally into two classes; one, in which failure was sudden and almost complete from the first, marked by lividity and great cardiac distress, the other, in which ample warning was given by slight pain, passing dyspnoea, restless nights, and other well-recognised symptoms. That this latter class gave good results for the treatment in question he thought was almost beyond controversy, and he gave notes of an illustrative case. Such cases were often men of high intelligence, largely of the professional class. They gave an intelligent co-operation, and found the treatment pleasant. He thought the practical physician also would welcome the substitution of a rational physical and mechanical treatment, for the uncertain weapons of a chemist's shop.

The discussion was then adjourned until the next meeting, March 2, on the motion of Dr. E. Symes Thompson, seconded by Dr. Shirley Jones, Droitwich.

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## ON THE TREATMENT OF AFFECTIONS OF THE HEART AND THE CIRCULATION BY BATHS, EXERCISES, AND CLIMATE.<sup>1</sup>

BY A. ERNEST SANSOM, M.D., F.R.C.P.

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I HAVE read with great interest and much instruction the report of the discussion which took place at the meeting of this Society on January 20 last. The subject was introduced in a truly scientific spirit by Dr. S. Hyde, and subsequent speakers contributed much to the elucidation of the various problems.

It is right, and indeed inevitable, that any measures and combinations of measures advocated for the treatment of a large and important class of diseases should be subjected to rigid scrutiny, and the conditions of their employment defined with as much accuracy as possible. The questions submitted are not those concerning a given health-resort, nor the prescribed plan denoted by the name of a certain physician, however valuable the plan may be and however great our obligations to one who has with zeal, energy and success promulgated his views. Our scope is wider. We recognise that not all our patients whose cases are just suitable for the treatment indicated are able to undertake a journey to a far distant health-resort, not all can obtain the services of skilled attendants, and yet it may be possible to put the principles of the treatment into action in their cases. Moreover, it may be that the methods themselves may be improved, for there is no finality in therapeutics.

My purpose is to place before you in a brief manner the views which I have been led to adopt from a review of the evidence which I have been able to obtain and of the cases which have come under my care. I shall consider the therapeutic agencies indicated in the title seriatim, and the combination of

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<sup>1</sup> A paper re-opening the discussion on Dr. Hyde's paper upon the above subject at the adjourned meeting of the British Balneological and Climatological Society.

these agencies, trying as far as possible to eliminate sources of error, so that we may arrive at a just appreciation of their value.

#### BATHS.

I have employed cool and cold baths in the treatment of cases of anæmia (including chlorosis) from my earliest days of practice. In many I have prescribed warm and cool spongings in sequence, and often douches in addition. I have found—I dare say the observation will be considered a trite one—that the earliest effect of a hot bath or of free sponging with hot water is a quickening of the action of the heart, the pulse becoming soft and relaxed. The cardiac pulsations are, at any rate for a time, reduced in force. The patient bleeds into his own subcutaneous tissues. The enervating effect of a hot bath or a succession of hot baths is well known and needs no discussion. If, after this preliminary warm bath or warm sponging, a cool or cold effusion or sponging is practised a reversed picture is presented. The subcutaneous arterioles contract, the ventricular systoles are more complete and energetic, though the rate is somewhat slowed. Moreover, the inciting of a respiratory reflex causes enhanced movement of blood through the cardiac chambers. A large number of cases, a great majority, of anæmia and chlorosis are accompanied by disorders of the circulation, and even by molecular change in the muscular fibrillæ of the heart. Under the bath treatment I have mentioned it is my experience, as I am sure it is of many others, that great improvement has resulted. In some cases the cold bath is used without the preliminary warm, but it is needless to say that in some the shock then is too great.

In the treatment of like circulatory disorders special baths have been in use for a very long time. In Germany, Schwalbach (Langenschwalbach) has been in repute for ages. Sir Francis Head in his "Bubbles from the Brunnens" described it about the year 1831. The water at a temperature of 50° F. is effervescent with carbonic acid. It is true that the mild ferruginous water swallowed is an integral part of the system, but a bath is prescribed about two hours after breakfast, its use being omitted every third or fourth day.

At Schlangenbad in the neighbourhood (six miles from Wiesbaden) the springs are mildly alkaline, of a higher temperature, 77° to 90° F., containing two cubic inches of carbonic acid gas to the pint. They are known to calm the perturbations of a nervous heart, and a rhapsodist says of them, "Vous sortez des eaux de Schlangenbad rajeuni comme un Phoenix—la jeunesse y devient plus belle, plus brillante, et l'âge y trouve une nouvelle vigueur."

Beneke in 1859 and 1861 and Groedel in 1878 adduced evidence to show that the baths of Nauheim, near Frankfurt, were beneficial, increasing the force of the heart and restoring compensation in cases of valvular disease. The late Aug. Schott in 1880, and his brother Theodore Schott in 1887, subsequently extended the records of experience. Dr. Theodore Schott added a system of definite muscular exercises to the bath treatment, and so initiated the combined system which we shall presently consider.

In France Dr. Coulomb of Bagnols-les-Bains published some well-studied observations of cases of heart disease treated by the baths previously to the years 1883 and 1885, and in 1887 my friend Dr. L. Blanc produced an excellent memoir, translated into English, on "Cardiac Affections of Rheumatic Origin treated at the Thermal Baths of Aix-les-Bains (Savoy)." The system of the douche-massage as practised at Aix-les-Bains, the water being of a temperature of 90° to 95° F., is well known and has been adopted at many of the bathing places in our own country.

The cases recorded by Dr. Blanc included seventy-three of diseases of the mitral valve, twenty-five of the aortic, and six of pericarditis. The chemical constitution of the water at Aix-les-Bains has probably but little to do with its therapeutic effect as used externally in these cases. Its chief value lies in its soft unctuous quality, due for the most part to the presence of organic matter (*barégine*), which at the agreeably warm temperature at which it is used adapts it so admirably for the douche-massage.

The water of Nauheim is effervescent from the presence of carbonic acid gas. The gaseous character of the water is moderated, according to the will of the physician, from a mere slight effervescence to the foaming Strombad, which is charged with



the gas in large proportion. I cannot doubt that the effervescent character of the water employed has some therapeutic effect. It probably agreeably stimulates the sensory nerve-terminals of the skin, so it causes a cool water to feel more agreeably warm. One seems to have an experience illustrating this point when one takes a bath in the sea at a time when the wind causes a foaming of the surf—the water seems to be warmer than it really is. Whether there is any really favourable reflex stimulation of the heart itself is an undetermined point. Though carbonic acid gas has some anæsthetic qualities it is probable that it is the mere air bubbles that do the work. Perhaps the pumping into the bath of a stream of ordinary air would serve all good purpose. Whether the effervescent water as at Nauheim, or the thermal soft water as at Aix-les-Bains, is to be preferred is also a matter of doubt. The skin stimulation in the former case is effected by the natural gas, in the latter by the massage-manipulation of the bath-attendant, the movements of whose hand accompany the flow of water over the surface.

#### EXERCISES.

It is perhaps not generally known that our own great clinician, Stokes, first (in 1854) called attention to the value of muscular exercise in the treatment of heart disease. Dr. Stokes, in his work on "*Diseases of the Heart and the Aorta*," published in Dublin, 1854, thus wrote :—

"The symptoms of debility of the heart are often removable by a regulated course of gymnastics or by pedestrian exercise, even in mountainous countries such as Switzerland, or the Highlands of Scotland or Ireland. We may often observe in such persons the occurrence of what is commonly known as 'getting the second wind'—that is to say, during the first period of the day the patient suffers from dyspnœa and palpitation to an extreme degree, but by persevering, without over-exertion or after a short rest, he can finish his day's work and even ascend high mountains with facility" (p. 357). This expression sounded the key-note of reaction against the plan adopted as a routine-practice for a long series of years, of keeping a patient who presented any sign of heart disease in conditions of the most

complete muscular repose attainable. Supposing that active disease is not present and not progressing in the cardiac tissues, a coddling policy, whereby the heart-muscle is kept at a minimum exercise of function, is contrary to sound physiology and good practice. Ling, of Sweden, in the early part of the present century established his system of movement-cure without any special adaptation to cardiac patients. Saeterburg, of Stockholm, and Zander used gymnastics in the treatment of diseases of the heart and described their experiences—which appeared to be very favourable—in the period between 1862 and 1872. The only specially-adapted machine in Zander's repertoire seems to have been the chest-expander, whereby the trunk was extended and the capacity of the chest increased, the shoulders being drawn upwards and backwards. By its use it is said the walls of the chest recovered their elasticity, the patient was made to inspire deeply and so obtain full inflation of the lungs, and the effect in developing the chest of young persons was very remarkable.

Oertel (see Ziemssen's "Cyclopædia," 1884) adopted and extended the doctrine and practice already promulgated by Stokes. In 1885, Aug. Schott in the *Zeitschrift für Therapie* wrote on the value of gymnastics for the diagnosis, prognosis and treatment of heart diseases, and subsequently Theodore Schott incorporated the treatment by muscular exercises with that of the baths of Nauheim as a system adopted and recommended by himself in cardiac therapeutics (see *Lancet*, May 23, 1891, pp. 1143, *et. seq.*). The plan of systematised muscular exercises adopted by Schott was precisely that initiated by Ling—viz., active exercise by the patient of his voluntary muscles, whilst an instructed attendant makes a certain resistance to each movement.

In my opinion, there is no room for doubt that systematised muscular exercise is an agency of great value in the treatment of disorders of the circulatory mechanism. The mode in which such muscular movements effect their good purpose is no doubt very complex, and there is room for much difference of opinion on the interpretation of the various observations. In my own opinion, the effect of exercise of the voluntary muscles is an accumulation of blood in the vessels of supply of such muscles, and a corresponding relief of congested areas. There is thus

in some degree a derivation from the engorged veins and the right chambers of the heart. Lauder Brunton has said "the vessels which supply the muscles of the body are capable of such extension, that when fully dilated they will allow the arterial blood to pour through them alone nearly as quickly as it usually does through the vessels of the skin, intestines and muscles together" (*cf.* Harveian Oration, *Lancet*, October 20, 1894, p. 895). Moreover, in the systematic muscular movements there are alternate contractions and relaxations, the former compressing the blood vessels, the latter freeing their channels. Concurrently there are increased activities of the absorbents and reflex nerve stimulations. In the movements of the trunk upon the lower extremities another set of factors comes into play. The alternate compression and relaxation of the abdominal wall must have a powerful effect upon the blood-supply to the abdominal viscera. The tendency must be in the main to cause the vessels of the splanchnic area to become dilated, and so to co-operate with those of the voluntary muscles in relieving any turgescence of the right chambers of the heart. The latest doctrines derived from experimentation were placed before the Society at the last meeting by Dr. George Oliver, and I can only add the tribute of my thanks for his valuable observations. My own view accords with his, that during muscular exercise there is a rapid fluid transfer through the capillary walls into the lymphatic and interstitial spaces.

It seems to me—forgive me if I adopt the tone of a censor—that there is too much disposition on questions of cardiac pathology to ignore the great lymphatic circulation. One is apt to endeavour to explain morbid affections of the circulatory mechanism by mechanical deviations from the normal of the apparatus of the general circulation. Those who deal with baths and massage know how important the lymph circulation is and must be. If I read the facts aright, it is a disturbance of the correlation between the general circulation and the lymph circulation that brings about dropsy. On the whole, I think the tendency to danger of muscular exercises, even of overstrain, has been exaggerated. In regard to the healthy heart, I know that Dr. Clifford Allbutt is of this opinion. He holds that the

importance of physical effort as a factor in heart disease has been unduly pressed, the effects of physical stress upon the organ being promptly counteracted by equilibrating machinery. I believe that, by gradual training, the heart in many morbid conditions can be made to react even as a healthy heart. It is not mere physical strain that constitutes much of a danger, but the concurrence of physical with nervous overstrain. A patient with an enfeebled heart may take pleasurable exercise with advantage, but if he takes such exercise at a time of mental anxiety or distress—if he hurries to catch a train, for example—then there may be serious and lasting consequences.

#### COMBINED EXERCISES AND BATHS.

I think it will best serve a useful purpose if I take a concrete case and suggest a simple plan of treatment in the first instance. Supposing that we have before us a patient convalescing from rheumatic fever, and there are fears of some change produced by rheumatic endocarditis about the mitral orifice. The patient has convalesced sufficiently to move about his room. Ought we to put in force the combined treatment at once? I think so. Here is a simple method I have long adopted.

In the morning, after a slight first breakfast of a rusk and cup of milk, a well-warmed, dry Turkish towel is brought, and the patient is instructed to rub the soles of his feet, his calves and his thighs therewith, himself sitting by the side of the bed. Such friction may of course be aided by nurse or attendant. If tired, the patient may rest on the bed again. Next, whilst in the sitting position, he is instructed to rub with the towel his upper extremities, his chest and back. Then—and the plan can be carried out progressively from day to day—he is told to make certain movements with the arms, using the towel only or a light cane. The patient sitting or standing, the spine maintained straight, the towel is held in each hand, equidistant from the spine, the head in front, and then the arms are slowly elevated to their fullest extent and brought back to the original position. So the upper thoracic muscles are brought into work. These movements are repeated several times, but always short of the production of any dyspnoea or distress. Then the arms, holding the towel or stick

symmetrically, are moved slowly and deliberately to and fro. Later the trunk-muscles are exercised, the patient stooping as far as the knees and then elevating the arms. At a still later period the stooping may be as far as the ground with afterwards the erect position with arms extended.

Here it may be objected that the danger of detachment of a vegetation to become an embolus presents itself. Such is a possible danger, but I think there is a greater peril of passive thrombi forming, on account of slowing of the circulation in the cardiac chambers, when a patient is kept with a torpid heart. To continue the exposition of this simple plan of treatment.

After an interval of repose, spongings with warm water are practised, or the patient is allowed for a few minutes to have a warm bath. Note that the feet should always be maintained warm. Lastly, there must be a sponging with cool water—at any rate, with water below the temperature of that of the warm bath. The addition of a little pine-oil or Sanitas to this is of advantage, causing as it does a slight stimulation of the surface and an agreeable glow. And now only follows the drying with warm towel and the envelopment in the bath gown.

The plan thus sketched out renders the services of a skilled attendant unnecessary, and is applicable to patients of slender means. No one should stand between doctor and patient—not an attendant nor gymnastic professor, however skilled. But by direction of the doctor the patient himself can perform the needful movements, and carry out the plan as an habitual, hygienic measure every day of his life.

Of course it does not exclude the adoption, by those who can afford it, of the more completely systematic plan for limited periods at a bath resort. When a patient does go to such a resort he should be placed under the care of a doctor of repute accustomed to the direction of the bath system and the movement-treatment of the special locality. I emphatically endorse the words of Dr. Hyde in condemning the administration of such treatment by persons who claim to be qualified, but who are destitute of qualifications, legal and moral.

*Estimation of Therapeutic Effects.*—We now come to a difficult part of the subject, and I ask you to remember that I express merely my own personal views.

The cases which are presented for treatment come for the most part under the following categories : (a) failing compensation in structural disease of the heart-valves ; (b) dilatation of the heart and failing myocardium, including fatty infiltration, without evidence of valvular disease ; (c) cardio-arterial disease, especially associated with morbid conditions of the kidney ; (d) disorders of the heart of nervous origin.

#### CRITERIA AND FALLACIES.

I propose to consider these under the separate headings denoted by the evidences presented during the clinical examination of a patient.

##### (1) *Subjective Symptoms and Signs external to the Heart itself.*

*Criteria.*—Dyspnœa, especially on exertion (the cardiac form). Œdema, from pre-tibial pitting to the more extensive œdemas of the dependent parts. Auscultatory evidence and signs of œdema of the basic portions of the lungs.

These are signs which indicate the need of treatment, the failure of preceding methods of treatment ; their amelioration or disappearance the favourable influence of treatment ; their persistence or intensification the failure or inadequacy of treatment. Probably they are the most trustworthy of all the signs we have to deal with.

*Fallacies.*—It is to be remembered that all adverse signs may pass away without the adoption of the bath *plus* exercise treatment. It is common knowledge that all the symptoms of cardiac failure in valvular disease have in many cases passed away and the individual has been restored to fair health (estimated by himself as complete) when no treatment, such as we are discussing, has been put in force. The question then becomes a comparative one between this and other forms of treatment.

Nervous complications may aggravate and even induce, without organic changes, all the signs and symptoms. Nervous complications are frequent. The complete induction, from causes affecting the nervous system primarily, of all the signs is rare, but such occurs in some cases of Graves' disease and allied affections (cf. *Transactions of the Medical Society of London*, vol. xiii., 1890, p. 481).

(2) *Physical Signs of Valvular Incompetence.*

*Criteria.*—A murmur, systolic in time, is heard over the apex of the heart. I shall exclude on this occasion murmurs at the base, only observing that a systolic murmur over the aorta and its branches rarely indicates organic disease of the aortic valve, unless a diastolic murmur accompanies it. A systolic murmur at the apex is generally held to indicate incompetence of the mitral valve; its appearance and continuance is frequently regarded as an unfavourable sign; its disappearance, though with some reservation, as a sign indicating that the issue of treatment has been favourable.

*Fallacies.*—A systolic murmur observed at or near the apex of the heart may be, and often is, of little or no morbid significance. If such murmur be localised in the near neighbourhood of the apex, and not at the apex itself, if it vary with the process of respiration, if it become greatly modified according to the position of the patient at the time of auscultation—in some positions and at some phases of respiration disappearing altogether—it is probably one of Potain's cardio-pulmonary murmurs due to the movement of the heart upon the adjoining lung, and is devoid of any hurtful significance.

But the murmur may be strictly localised at the apex, may indicate to the most accurate observer mitral incompetence, and yet be independent of structural disease. This has been proved by the close observation of many cases. In such, according to my opinion, there is a persisting disturbance of the normal correlation between the muscle of the wall of the left ventricle and the papillary muscles, whereby a slight but insignificant regurgitant stream is occasioned. The means of differentiating such a harmless murmur from one of serious organic defect is afforded by the observation of the second sound. If the second sound over the commencement of the aorta is found to be well marked, and that over the pulmonary artery (in the second and third left intercostal spaces close to the sternum) duly pronounced but not accentuated, it may be inferred that any regurgitation through the mitral is insignificant.

### (3) *Physical Evidence of Enlargement of the Heart.*

*Criteria.*—It is known to all who have read the literature of the subject, that the evidence deduced from records of the supposed outline of the heart before and after treatment has been regarded as testifying in a very important degree to the value of the Nauheim plan. The diminution of the area occupied by the heart, the supposed shrinkage of the organ, has been held to denote a favourable change towards the normal from a morbid dilatation. In some cases, when subjective signs of amendment concur with a return to the normal of the position, size, and shape of the heart, there can be no doubt of the correctness of the inference, and the causal relation of treatment and favourable result is in the highest degree probable.

*Fallacies*, however, are numerous.

*First Fallacy.*—Whatever the mode of physical examination employed—inspection, palpation, percussion in various modes—the personal equation of the observer has to be taken into account. I thought that my own method of obtaining an outline by percussion afforded precise results. I have confirmed these again and again. My own house physicians and clinical clerks generally arrive at conclusions little differing from my own, but yet I have found that some very competent observers have in a given case produced outlines indicating the size and shape of the heart differing very widely from my own. I have been unable to detect any abnormality in a heart which has been described as greatly dilated. I have become almost distrustful of myself, and I am forced to the conclusion that the unconscious cerebration of the observer may have something to do with the production of graphic records which are said to indicate with accuracy the outline of the heart.

I must go further and state my opinion for just what it is worth—it is derived from the examination of a considerable number of outlines purporting to be those of the heart before and after the Nauheim treatment—that many are the results of a fallacious plan of physical examination, and cannot be held to represent with any degree of accuracy the size and position of the heart. On this point my views are in accord with those of



Dr. G. V. Poore, Sir William Broadbent, Dr. Herschell, and others.

*Second Fallacy.*—The heart varies in volume under so many different conditions that the inference that its diminution is the effect of any given plan of treatment is not strictly justifiable.

Many observers have recorded their conclusions to the effect that the bulk of the heart in a given subject may greatly change under varying conditions within very brief periods of time. Many circumstances may induce such variations. The contents and consequent bulk of the right auricle and ventricle must vary with the varying turgescence of the liver. Lauder Brunton has vividly shown what an elastic organ the liver is, and how variable is the rate of flow of the blood through it (*cf.* "Lettsomian Lectures on Disorders of Digestion: their Consequences and Treatment;" London: Macmillan & Co., 1886, p. 94).

A dilatation of the blood vessels within the abdomen (*i.e.*, in the splanchnic area) also may reduce the contents and consequent bulk of the right auricle and ventricle when there is no obvious change in the volume of the liver. Another cause of reduction of the observed size of the right cavities is expansion of the lungs. There may be an apparent reduction of bulk owing to the increased resonance over the inflated air cells bordering on the heart, and a real reduction, as the contents of the right chambers is reduced by so much, as is due to the augmented volume of blood in the pulmonary tissue.

Sir Wm. Broadbent has said that "in a heart dilated from over exertion, the apex beat may often be felt to come in for half an inch towards the normal situation, when the patient is simply made to walk two or three turns across a room."

Heitler has made observations from which he concludes that there are rhythmic diurnal variations in the volume of the heart, the pulse remaining unaffected by these.

In conditions of disease the apparent bulk of the heart, as determined by the means of physical diagnosis, may be temporarily increased by the congestion of the vessels of the pericardium, as well as those of the coronary blood supply, and there may be fluid exudation into the spaces of the sur-

rounding tissues. In cases of rheumatic valvular disease and rheumatic carditis (Sturges), when the patient has been at rest, and when no special therapeutic means could be cited as disposing causes, I have observed evidence of extraordinary variation of the bulk of the heart in the space of twenty-four hours (*cf.* "International Clinics," vol. i., 1894, p. 12).

Cases which I have observed have convinced me that from causes affecting<sup>1</sup> the nervous system alone there may be extreme dilatation of the heart. I have recorded a case of a man aged 40, who manifested extreme dilatation of the heart, the pulse rate being 200 per minute, and the signs those which seemed to me to indicate neuritis of the vagus. The outline of the left ventricle on the sixth day of observation had receded to almost the normal, and to the normal on the thirteenth day—the pulse rate dropped from 200 to 58, and the respiration rate from 50 to 34.

In a case of Graves' disease I observed dilatation of the *right* ventricle supervene with signs of tricuspid reflex. In other cases of Graves' disease I have traced dilatation of the left ventricle or of the whole heart when there has been no rheumatic antecedent nor other evidence of disease affecting the heart.

I am of opinion that disorders of the vagus and of the nerve-mechanism of the heart have been too much overlooked as causes of dilatation of the heart-chambers.

But supposing that in a case of structural disease of the heart—say of mitral valve disease—a recession of dulness has been, after the given treatment, satisfactorily found, must this be unhesitatingly regarded as a favourable sign? I think not. In a well compensated mitral insufficiency a certain dilatation of the left ventricle, accompanying hypertrophy, is a necessity. For to adequately supply the aorta the ventricular contents must be the normal, *plus* so much as regurgitates at each systole into the auricle. This condition for perfect compensation was well pointed out by the late Dr. Herbert Davies, and is enforced by Dr. Arthur Templer Davies. In how many cases of well compensated valvular disease have I observed evidences of hypertrophy and dilatation and yet the patient, without any special treatment, has been in the enjoyment of his usual

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<sup>1</sup> *Med. Press and Circ.*, June 3, 1896, p. 571.

powers for very many years. One of my old friends reminded me of a lady, under observation for more than thirty years, who had such well compensated mitral insufficiency. She died when over 90 years of age, but not from heart disease. These considerations are sufficient to show that the outlines of the heart purporting to demonstrate the curative effects of the Nauheim plan of treatment must not be accepted as conclusive evidence.

(4) *Sphygmographic Evidence.*

I must say that personally I consider sphygmographic evidence of very little value in demonstrating the success of any treatment such as we have been discussing. The tracings may show a greater regularity of the pulsations, and be *pro tanto* of some usefulness as records. As evidences of intra-arterial pressure I think they are untrustworthy. Indeed in some cases of sphygmograms which have been published as affording evidence of the favourable results of the Nauheim treatment, my own interpretations would be the precise opposite of those brought forward. In some cases it has been shown that sphygmograms supposed to demonstrate the favourable effects of such treatment have been taken by a nurse. Dr. C. W. Chapman has very properly condemned such proceedings and any inference taken from them (*British Medical Journal*, August 14, 1897, p. 433). I have been credibly informed that patients under treatment converse glibly as to the variations in size of their hearts, how that these have contracted two inches all round the area, or one inch or a finger's breadth; that they exhibit charts and diagrams supposed (vainly, I am sure) to indicate such recessions; and that they pore over and descant upon numbers of slips of sphygmograms signifying nothing in particular. If this be so, it is time that those who have the real progress of scientific medicine at heart protest against such a travesty.

CLIMATE.

It is no small gain, no inconsiderable therapeutic advantage, for a patient to be removed from irksome surroundings or from the sick-room, with its suggestions of suffering, to a locality where blue sky, fresh air, and pleasant prospects combine with the necessary appliances for definite and satisfactory medical treat-

ment. Whether a poor patient be sent to one of the health-resorts of Great Britain, to Aix-les-Bains or to Nauheim is a *question de milieu*. I need not dwell on this subject, for it has received adequate recognition from Dr. Hyde and others. I need only record my opinion that climatic treatment, combined with the judicious employment of the means under discussion, may turn the scale towards recovery in many cases where home-treatment, however conscientiously carried out, fails. But wherever such treatment be conducted, let the mind as well as the body be directed in proper courses. Let no aberrations of the system adopted give rise to morbid introspection on the part of the patient. Let all the surroundings be those of hope and cheerfulness, but let none of them be such as shall make of the patient that most miserable of mortals, a cardiac hypochondriac.

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Professor CLIFFORD ALLBUTT, who was prevented by the lateness of the hour from saying more than a few words, has sent in the following notes of some points which occurred to him during the debate, excluding those which had been sufficiently considered by previous speakers. He had, he said, been struck by the character of the debate, and particularly by the admirable introduction of Dr. Hyde, in this respect, that the treatment of heart diseases seems to have passed far into the domain of hygiene. A large part of the ground is now covered by the influences of climate, diet and alcohol, habits, exercises, clothing and the like ; not forgetting the management of the bowels and so forth, which also lie on the confines of hygiene. He would next refer to a remarkable comment of Dr. Herringham, namely, that the gymnastic treatment of diseases of the heart, which had been urged for the well-to-do, might not be applicable, and probably is not, for hospital patients, with whom life has been harder. This comment cleared up a part of his own early experience. In his student days in the wards of St. George's he had been struck by the enormous advantages of rest in the cardiac cases ; and such teachers as Bence Jones and Fuller were justified in pointing out these advantages, though it would now seem that to recommend rest even for all hospital

cases would lead us into error. Bence Jones, indeed, did not forget to recall the words of Stokes in respect of exercise, but the bearing of Stokes' precepts was supposed then to be very restricted. Soon after he entered into practice and became attached to a hospital the views of Oertel became prominent; and at this time there came under his care a most intelligent patient, himself a medical man of German origin, who discussed with the present speaker Oertel's views, then first published, as bearing on his own case, which was one of dilated heart with mitral regurgitation ensuing on many years of arduous practice. All Oertel's essays were carefully studied, and the patient took much of the management of the case into his own hands. The method thus controlled, the results were so wonderful that from that date the speaker had set these methods in the forefront of the treatment of suitable cases. Suffice it to say that after some few weeks the patient returned from the Continent, having at the end of his time ascended the Niesen (7,763 feet, say five hours) without discomfort. Although at last his friend succumbed to his malady, he was able from time to time to repair himself in this way, though at each relapse the treatment was at once less successful and more difficult to bring to bear. Now these cases of flabby heart are those in which such methods are most successful; and in the speaker's opinion, in discussing cardiac cases and gymnastic methods, due discrimination is not made between those in which the treatment is of less avail than other means, or is useless or even harmful, as aortic diseases and arterial degeneration with rise of arterial blood pressure, and others, such as the case quoted above, in which the venous pressure is high, in which gymnastics are of great value. In his opinion the distinction, broadly speaking, between the cases suitable for exercises and the rest lies in the function of the lungs. He would not forget the immense importance of opening out the vast muscular areas, but this importance is sufficiently familiar to practitioners, and he would therefore lay stress rather on the value of gymnastics in opening out the lungs. To compare the two areas in importance in this respect would be difficult; but in many cases of townsmen and others, especially in invalid persons, the pulmonary area is not cultivated; the chest

is not expanded to its utmost, and the venous pressure remains high. By expanding the chest venous pressure is lowered, and the delivery of blood from the right heart is favoured. He added that even in healthy men these conditions of the respiration are too much forgotten, and that runners and others should be trained to breathe as singers are trained. He was told by a singer that he had found that this education had given him a great advantage in running races. By careful training of the lungs, congestion of the right heart is avoided in ordinary sports. And thus it is that in heart diseases tending to increase of venous pressure exercises are so useful ; on the other hand, in rise of arterial pressure such exercises, if indicated at all, should be initiated with the greatest care, and not at all until arterial blood pressure has been lowered by appropriate medicines and regimen. The speaker would also warn against the use or continuance of exercises in heart disease at times of fatigue. Without going into the matter of fatigue products, he would urge that exercises, as Dr. Sansom has said, should be used in the morning at the time of best energy. Even in healthy persons he had often seen more or less harm done by the continuance or beginning of exercises towards the end of the day, after previous exertion, or after a busy day in an office or the like. The speakers in this debate have been asked to formulate their opinion of gymnastics in heart diseases : well, he need not repeat the warnings and limitations under which he would make use of the Oertel, Swedish and other methods. Familiar with the Oertel method, he had seen but little of the Nauheim method ; and he would confess that he approached the subject with some prejudice. As in the case of hypnotism, electricity, and the like, agencies of considerable value are so inextricably mixed up with errors and abuses that it is very difficult to discriminate between the right and the wrong use of them. In private practice he had had cause, so he thought, of dissatisfaction in respect of the purely disinterested pursuit of science and the art of healing by the professors of "Schott treatment." Moreover he had not only some prejudice to get over in respect of the sincerity and disinterestedness of the methods of some of these practitioners, but also of their alleged facts. Diagrams were published in

which impossible delineations of the heart were pourtrayed, impossible niceties of diagnosis were relied upon; and on such facts as may be true far more weight of inference has been laid than they were fit to carry. That the heart undergoes frequent changes of diameter, even in health, from time to time, so far from denying he was perhaps one of the first to assert (1871); but for this very reason such indications must be weighed with the utmost care and judgment. For instance, a young man by over muscular exertion gets a rather dilated and rather irritable heart; what he wants is a week or ten days in bed, which cures him. He wants no Schott methods—they do even more harm than good; in twenty-four hours the dilatation subsides, exercises or no exercises, baths or none. If these cases have not gone far they end quickly in recovery without much method beyond common sense; when they have gone far they resist all methods; “irritable heart” from over exertion is among the most obstinate of maladies, and gets little or no good from gymnastics. The speaker would refer here with interest to Dr. Oliver’s remarks on the lymph circulation, and ventures to suggest to Dr. Oliver that a comparison between the specific gravities of the blood before and after his treatment might prove of importance. In the Schott plan he would suggest that the baths are of subordinate importance, and adapted rather for the first stage of treatment. The *system* of all well-managed watering places is of great value in forwarding the more special means of treatment.

The speaker had again to contend with some prejudice, not only in respect of the interpretations of the mechanics of the circulation, but also of the nervous hypotheses which are so freely offered. The experiments of Mosso, Oliver, Brunton and Tunnicliffe are intelligible, and for them we are grateful; but mere speculative neuropathology darkens counsel. And these speculations are largely vitiated by a want of discrimination between tone and tension. Some authors have actually taken alarm on finding the arterial blood pressure raised by exercises, as if the heart could be benefited without increasing its tone, and therewith the arterial pressure; and this the more as in cases suitable for exercises arterial pressure should rise as venous pressure falls. Tension, by confusion with tone, is thus made a

bogie. It should be remembered that tone and tension are not only different things, but are even largely opposed the one to the other, and error is but clumsily avoided by the use in difficulty of such misleading phrases as intra-vascular tension (tension of what?), blood tension, and so forth. Tension is of course the tendency of the blood to split the vessel longitudinally or transversely, and this tension calls forth tone which opposes it. But so large a subject cannot be profitably discussed incidentally; he would only indicate the outlines of the problem.

Dr. HERON said that Dr. Hyde's paper had dealt so fully and so well with the subject under consideration, and the points of most importance in the paper had been so elaborated by Dr. Oliver and the other speakers, that there remained nothing new to say, unless it were something drawn from a man's personal experience. A man's own experience, however, could never be, he said, in a subject of this kind, of first-rate importance, for the field of observation was too wide to be covered by any one man's opportunities.

Speaking of the baths, Dr. Heron said the virtues stated to be peculiar to the Nauheim waters and of special usefulness in the treatment of certain forms of heart disease were, in his opinion, purely mythical. He thought the water supplied by any water company in London or elsewhere was as useful in the treatment of these diseases as the Nauheim waters.

As to climate, there could be no doubt that two of the most potent helpers in the treatment of most diseases were sunshine and fresh air. There was in the world no finer climate, he believed, than the climate of England during the summer and early autumn—that was to say, when we had fine weather. He granted the force of the qualifying clause in the last sentence, but was doubtful whether the climates of other countries in Europe were much better than our own. It was amusing to see people afflicted, or believing themselves afflicted, with certain ailments hurrying across the Channel in the belief that they would find health at some German or French watering place, when they could certainly find all they needed quite as well done, and certainly more comfortably done, at our best British health resorts.

Properly regulated exercise was useful in the treatment of



many forms of disease, and among these certainly were some forms of heart disease. Any man or woman could, with a few hints from a medical man, quite well regulate the kind and amount of exercise needed to help in the treatment of heart diseases. In cases where heart compensation was established, the best forms of exercise were to be got from out-of-door games and exercises. Dr. Heron mentioned two cases of heart disease he had known of for some years in men over fifty years of age. These men were still in the habit of practising at the nets during the cricket season at Lord's cricket ground, and had both assured him this form of exercise was very pleasant and useful to them. He mentioned another case of a man now eighty-three years of age, seen by Dr. Heron with Dr. Molson, of Chelmsford. This patient had aortic obstruction and mitral regurgitation, and he forcibly described the condition of his heart, which was much enlarged, by saying he had had his "heart in his left trouser pocket for more than fifty years." His illness had probably lasted for quite fifty years, judging from the history of the case. This man had taken an active part in shooting, riding, and salmon-fishing until he was long past seventy-five years of age, and those who had swung an eighteen-foot salmon-rod while standing waist-high in the rushing water of a Highland stream would not regard that sort of exercise as a triviality. But besides the sports he had named there were cycling, walking (one of the best of them all), tennis, skating, golf, &c., &c., and all these games, properly regulated, were most useful adjuncts to the treatment of heart disease.

Dr. HARRY CAMPBELL said he would confine his remarks to the physical aspects of the question. He regarded Dr. Oliver's observations as very valuable in this connection. Dr. Campbell emphasised the fact that muscular exercise constitutes by far the most powerful cardiac stimulant at our command. Compared with it digitalis, strychnine and alcohol were as nothing. He pointed out that in resisted movements, performed in the upright position, almost the entire muscular system was thrown into a state of gentle tonic contraction. In consequence of this a large mass of blood was attracted towards the muscles, the venous output from them being kept low, however, by the

continuous pressure on the flaccid veins. He did not say that less blood escaped from the muscles when tonically contracted than during rest, but contended that the amount of blood coming from them was small in relation to the augmented cardiac action. Further, the flow of blood along the inferior vena cava was retarded owing to the tonic contraction of the abdominal muscles, and consequent pressure on the compressible intra-abdominal veins. Hence resisted movements caused (1) augmented action of the heart; (2) a large determination of blood to the muscles; (3) a comparatively low input into the right heart. The effect of these factors was to fill the arteries at the expense of the veins. Dr. Campbell further contended that exactly the same thing happens during immersion in the cold bath as in resisted movements, *i.e.*, a widespread involuntary tonic contraction of the muscles. Another effect of the cold bath was a deep inspiration, which favoured the circulation through the lungs. This led the speaker to describe the mode of breathing best calculated to facilitate the pulmonary circulation: inspirations, he said, should be slow and deep, expirations quick and shallow.

Dr. BEZLY THORNE exhibited radiograms which had been forwarded to him by Dr. Schott, together with a transparent film on which had been traced the outline of the patient's thorax and the circles made by the shadow of discs of lead fixed to the nipples. The transfer of the film from the one radiogram to the other showed that the nipples occupied the same actual position in both radiograms. There was observable a diminution in the area of the cardiac shadow after exercises. Dr. Thorne also handed round radiograms made in September, 1896, by Mr. Wilson Noble, from a patient of Mr. Harris, of Cranbrook, who, together with himself, assisted Mr. Noble in the observations. In this case also the area of the cardiac shadow showed a diminution after seven movements. The patient was a man, 50 years of age, with mitral regurgitations and œdema of the lower extremities. In conclusion Dr. Thorne made the following observations:—

“I am exceedingly glad that the courtesy of your President has afforded me the opportunity of addressing you for a second

time in the course of the discussion of this subject, because I am thereby enabled to refer to some observations which have been made by Dr. Sansom. He has told you that in the practice of these methods it has been the custom to make drawings of the area of the cardiac dulness, and to take pulse tracings on "magic slips of paper," and that on the basis of such records, patients discuss and compare their symptoms and progress. And he has also informed you that, worst of all, the pulse tracings to which he alludes are made by nurses and not by a medical man. Now I seize the opportunity to state to you formally and in public, and more especially to the Fellows of this Society, to which I believe I have been elected this evening, that all these things I do, or have done under my authority and direction, and that I publicly take upon myself the absolute and entire responsibility for my proceedings. I venture to inform the medical men here present that, if they follow the practice alluded to, by the time that they have made 500, or say 1,000 or more, of such tracings of areas of dulness, and have carefully examined and compared them, they will find they have learned things that they did not know before, and that they have at their command means of information of considerable value in the practice of their work.

"With regard to the sphygmograms, I wish it to be understood that I employ none but nurses of full hospital training, and of experience in their vocation, and that in the practice of pulse tracing they are instructed and trained by myself; and I have no hesitation in affirming that for delicacy of touch, and for efficiency and faithfulness, their work would compare favourably with that of the most accomplished physician in this room. I now come to the question of patients comparing symptoms and results with each other and with their friends. I suppose I am safe in saying that there is not a member of the profession present who does not constantly make use of the thermometer and that it is within the experience of everyone that patients take great pains to find out what is the state of their temperature, canvass the subject with fellow patients and with friends, that they will even become possessed of a thermometer and make use of it upon themselves and their friends, and in

some instances go the length of taking possession of a temperature chart and keeping it as a family record to be referred to and handed about. But I have yet to learn that any physician has thought it incumbent on himself to abandon the use of the thermometer and to suggest its elimination from medical work, because that instrument, and the observations which are taken by its means, are from time to time ignorantly and injuriously used by the laity. I have only one further observation to make, and that is, that in speaking as I do, I express myself in the same spirit which marked the observations to which I am replying, and that I do so merely in the course of free and open discussion and without any personal feeling."

Dr. SHIRLEY JONES (Droitwich): Mr. President, judging from the tone of those who have taken part in this discussion, there seems to be a considerable amount of unanimity as to the value of this treatment, but I know there are many who still regard it with doubt and disfavour, and I cannot help thinking that to a great extent this is due to the fact that many cases are submitted to this treatment which are totally unsuited for it. It never was suggested that this method of treatment should apply to all cases of heart disease, or in every case where there is an enlarged cardiac area, and I venture to think, to apply it to all such cases will only lead to disappointment, and tend to lead into disrepute a very valuable remedy. One of the previous speakers has cited several cases where persons suffering from organic cardiac diseases have been enabled to pursue and enjoy out-door sports requiring a great amount of effort, with advantage to themselves, and he seemed to wish to indicate that the exercise obtained from following these sports were the means by which he retained good health. No doubt this to a great extent is true, but I venture to think that in those cases he has mentioned there must have been a perfect compensation and therefore no need for treatment, for as long as the compensation remains good a heart with organic disease is, for all practical purposes, as good as a sound one, but when compensation fails then the patient finds something wrong and seeks relief.

The vexed question in this discussion appears to be, whether the decrease in size of the cardiac area denotes a decrease in the

size of the heart, of whether it is due to some other cause, viz., an alteration in the position of the heart, or an improved condition of the lungs. That there is an improved condition of the lungs is undoubted, and I think it is equally true that there is an altered position of the organ due to its more forcible and regular contractions. As to whether there is any actual decrease in the size, we must ask the question. What is the cause of the enlargement? is it due to the toneless condition of the muscle? or is it due to the fact that the heart fails to completely empty the ventricles at each systole? If to either or both of these theories, I see no reason why there should not be a decrease in the size of the organ under the improved condition as the result of this treatment. We have heard a great deal about the difficulty in accurately mapping out the cardiac area by percussion, and I quite agree that it is an exceedingly difficult and oftentimes impossible task for even a skilled percussor; but to my mind it does not need much skill or practice to denote the position of the impulse beat, and although many who practise this method of treatment will often find cases of cardiac failure improve very considerably without any alteration of the position of the impulse or diminution in size of the cardiac area, yet on the other hand one often finds the apex beat alter its position from the nipple line or outside it to a point  $\frac{1}{2}$  in. or  $\frac{3}{4}$  in. inside it; there can be no mistake that the position of the impulse varies under this treatment.

Dr. Hyde is of opinion that the exercises are a more important factor than the baths, but without detracting in any way from the value of exercises, I do think that baths, properly prescribed, are the more potent factor, and since I have been interested in this method of treatment I have noted the pulses of patients suffering from chronic and exhaustive diseases, *e.g.*, rheumatoid arthritis, during the time of their immersion in strong saline baths, and I have been struck with the marked improvement which has taken place in the pulses of such patients; so marked is the improvement and so frequent, that I think one is justified in making a suggestion as to why patients so frequently gain benefit from bathing in waters rich in mineral constituents, viz., through the tonic effects which such waters, at suitable temperature, have upon the heart.

Dr. Hyde has also alluded to a cumulative effect which mineral waters possess. I think those practising in the neighbourhood of strong saline baths will sometimes meet with action, and in my experience it occurs more often in cases of cardiac failure associated with a strong gouty diathesis.

Dr. KINGSCOTE said that while believing that the carbonic acid gas was more invigorating, he had obtained nearly the same effects with compressed air in the baths. He deprecated the use of mechanical contrivances for the exercises; they could not watch the patient as an attendant was trained to do. He recommended the inhalation of free oxygen both during the bath and exercises; it counteracted the carbonic acid gas inhaled and increased the pulse rate. He had found great benefit in certain cases of asthma from the use of the baths and exercises.

Dr. FORTESCUE FOX drew attention to a peculiar condition of the peripheral circulation met with in subjects of catarrh, especially chronic gastric catarrh, of gouty family history. Such persons say they are always cold, healthy animal warmth is almost absent; the condition may almost be described as one of *chronic rigor*. Following Dr. Oliver, one must suppose in such cases that the main error is in the *distribution of the blood*. Stimulating thermal treatment, and in Dr. Fox's experience hot peat baths especially, remarkably relieve this condition and restore the cutaneous circulation, and the sense of warmth.

With reference to heart cases, although very many could not take hot baths—or what has been well named by Dr. Hyde the “higher thermal treatment”—yet they often benefited by *warm* or tepid douches, delivered without pressure or mechanical excitation, sometimes accompanied by gentle massage. Cases of fatty and dilated heart with or without valvular disease are often notably benefited under such treatment. The cumulative effects of *hot* baths were very real, and must be carefully avoided by the Spa practitioner. They were, in his view, simply due to excessive temperature, and were happily less common in this country than at some Continental Spas, where a routine *cure* of many baths was undergone under debilitating climatic conditions. He would emphasize the importance of comparatively *low* tempera-

tures and very *slow* movements in the treatment of heart affections, watching carefully against quickening of the respiration or pulse rate. It was well known that slow movements are *per se* sedative to the nervous centres. The importance of the condition of innervation in these affections must not be overlooked. It is often the dominant factor, although sometimes strangely neglected. It often becomes necessary to reassure a patient under nervous alarm, and this is the bounden duty of every Balneologist as a part of the treatment in heart affections.

Dr. L. BLANC (from Aix-les-Bains, France) said he had treated cases of valvular diseases in rheumatic patients for twenty-five years. When he began to practise in Aix-les-Bains every physician was afraid to send patients into hot mineral baths. The slightest mitral regurgitation used to be considered as a contra-indication of Aix treatment. Nevertheless, he did dare to have cases of mitral disease, at the early period in patients recovering from rheumatic fever, treated by the Aix douche massage, and the results were very satisfactory. Some hundred and twenty cases<sup>1</sup> of this sort were very much improved; the sphygmographic tests illustrated the fact. Now, in his opinion, first valvular diseases—chiefly mitral regurgitation in the early period, when compensation is quite good—are much improved by Aix douche massage.

Those patients were not cases of "true chronic rheumatism," but so-called "sequelæ of rheumatic fever"—not the cases to be sent to Aix, not owing to the cardiac disease, but for the purpose of having the stiffnesses of joints, muscular wasting and general health improved.

Secondly, cases of aortic valvular diseases and arterial sclerosis in rheumatic (chronic rheumatism) or gouty patients, are not a contra-indication of Aix treatment and may be rather improved.

As to the physiological action of the Aix treatment, Dr. Blanc recorded the experiments of Dr. Forestier from Aix-les-Bains relating the arterial pressure<sup>2</sup> which were made on himself in special conditions of diet by means of sphygmomanometer.

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<sup>1</sup> See "Cardiac Diseases from Rheumatic Origin," Aix-les-Bains, 1884.

<sup>2</sup> *Revue de Clinique et Therapeutique*, Mai, 1894.

The Aix tepid douche massage has a tendency to lower the arterial pressure a little. Very likely the douche massage increases the peripheral capillary circulation and diminishes a little the central circulation and relieves the heart. This physiological action is just that of the Nauheim treatment, illustrated by several physicians who have experienced it in England.

It is necessary to notice that by the douche massage the elimination of the toxins is greatly increased, in short *Aix douche massage* performed by masseurs or masseuses with tepid water may be considered as effective as Nauheim treatment.

Dr. BLACK JONES (Llangammarch) said : Having had two years' experience of the Schott treatment at Llangammarch Wells, I venture to offer a few remarks as to the practical results I have obtained.

I have had good results from both the artificial effervescing baths, and from baths containing the Llangammarch water, which consists of the chlorides of barium, calcium and sodium. I have found that the diminution of the pulse rate is slight immediately the patient leaves the bath, but reaches a maximum about half an hour or an hour afterwards and lasts for several hours. In no case have I observed the large shrinkage in the area of cardiac dulness which some have reported. The diminution that I have observed has been slight and has only been noticed after three or four weeks' treatment.

With regard to the exercises I consider that they are less efficacious than the baths and are subsidiary to them.

In addition, I have prescribed the barium water internally. Lauder Brunton has shown that barium acts both on voluntary and involuntary muscular fibre by prolonging considerably the contraction, and he considers that its action is similar to digitalis in increasing the force of the ventricular contraction and prolonging diastole. It also has the further advantage of being a good diuretic.

Dr. C. W. CHAPMAN considered that cases of organic heart disease treated by baths and exercises should not be spoken of as cured, or, indeed, more than temporarily relieved until the lapse of two or three months from the termination of the course. A dilated heart may improve under the treatment, and the patient



be back to his family but a short time before fatal syncope occurs. Dr. Chapman had known such instances. Patients are liable to be unduly impressed with the diagrammatic records of their cases, and are apt to ignore the precautions that previously influenced them.

Dr. MYRTLE (Harrogate) said: I congratulate Dr. Hyde on having brought before this Society, in such a practical and interesting paper, the newest method adopted in the treatment of a large class of cardiac and circulatory derangements, a class of cases which, till now, have been for the most part dealt with in a purely empirical fashion. We have reason to congratulate ourselves also on the way in which the discussion was opened; nothing could have been more opportune than that Dr. Hyde's matter-of-fact observations should have been backed up by the very original and scientific discoveries of Dr. Oliver, showing how the changes brought about in the blood itself, as well as in the superficial vessels, come to the relief of a feeble and over-taxed heart. If we take the common-sense clinical observations of the one with the brilliant discoveries of the other, we shall have gained a knowledge of the *modus operandi* of balneological and gymnastic treatment of heart and other internal affections which must prove of the highest value. I agree with Dr. Hyde and other speakers that we must not accept everything that is said about the wonders effected by any special baths or exercises. I doubt the accuracy of cardiac measurements either after the one or the other. I cannot see how a feeble and enlarged heart can shrink half an inch in circumference after twenty-four minutes' resisted movements or twelve minutes' immersion in any bath. At the same time I am convinced of their beneficial influence in well selected cases, where these measures are systematically and carefully carried out. Dr. Heron believes that ordinary warm water baths are quite as good as the mineral baths; I must take the liberty of differing from him, because the effect of a mineral bath on the vessels and vaso-motor nerves of the skin is found to last for hours, I may say in some cases days, after its proper administration, but the effect of a warm bath in plain water is evanescent, and the vessels and nerves return to their normal state immediately after

the patient comes out of it. One word of caution about baths. See that in prescribing them that the trouble—labour if you like—of going, undressing, redressing, and returning will not outweigh the benefit the bath should yield. Another point after the bath. See that the patient is allowed plenty of time to cool before leaving the establishment and on getting home, that rest of mind and body is secured for one hour at least. My experience of baths, and it is as large as any balneologist in this country, is the very same as that of Drs. Hyde and Oliver, and I agree with everything they have brought so forcibly before our notice.

As to exercises, I began to prescribe these, both active and passive, in advanced and complicated cardiac cases, in 1873. The first case was that of a great friend, a physician; he passed the whole of his time propped up in bed or in a wheel chair; he never walked a step, and his life was miserable, his arms and legs were numb, and to his horror I advised him to walk a few steps day by day; he increased his distance, then he ventured to walk up a short stair, by and by a bit of a steep street, and in a month he had improved so much I ordered him baths; in three months he was so much better he returned to his work entirely relieved of all urgent symptoms. Since then I have followed the same lines and have used the stick indoors, just as Dr. Samson advises the towel, making the patient raise his arms above the head and behind the shoulders, thereby bringing the chest walls into expansion.

As regards the description Sir Philip Smyly gives of the purple nose and cheeks and hands, with the waxy wizened look of the ears and forehead being speedily removed by exercise, I have remarked the same follow the inhalation of oxygen, in a case where the patient was so far gone we could use no form of exercise whatever; here we had frequent attacks of Cheyne-Stokes breathing to a most unusual extent, but the oxygen never produced the slightest change in it. I know nothing about the influence of climate from personal experience, except that during the past months of December, January, and February the temperature has not only been 10 degrees above the average during the day, but been frequently as warm during the night as the day. All my heart cases have I think benefited to a very great extent

from this weather, their lives have been more comfortable, we have had less difficulty in breathing, the fingers have not been numbed as they used to, we have had fewer slight hæmorrhages, either from mucous membranes or extravasation beneath the skin, better sleep, and appetite all that could be desired.

Dr. E. SYMES THOMPSON, who was unavoidably prevented being present at the discussion, wrote as follows :—

“Had I been present this evening I should have referred to the value of systematic, watchful attention to every minute detail which, in so many cases of chronic cardiac disorder, secures arrest and determines recovery.

“I have long recognised the value of baths, and have been greatly impressed of late with the effect of effervescing baths in cardiac and neurotic cases.

“The careful application of resisted movements has done more than digitalis, and more than could have been anticipated in rehabilitating the heart when compensation was defective.

“Benefit has been noted in cases of valvular disease as well as in cases of cardiac neurosis associated with pain, sleeplessness and disturbed circulation.”

The PRESIDENT (Dr. W. V. SNOW, Bournemouth) congratulated the Fellows on the interesting and successful papers and discussion, and Dr. HYDE thanked the gentlemen who had contributed so much by their presence and speeches to the success of the discussions, and also expressed his thanks for the kind reception accorded to his paper.

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A REPLY TO THE COMMUNICATION OF DR. E. SOLLY  
(OF HARROGATE) ON "THE EXTERNAL TREAT-  
MENT OF SYPHILIS."<sup>1</sup>

BY DR. A. LIEVEN (AIX-LA-CHAPELLE).

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(TRANSLATION.)

IN the last issue of the *BALNEOLOGICAL JOURNAL* Dr. Solly advocates the claims of Harrogate, and of the treatment of syphilis there. I cannot refrain from making a few observations relative to the manner in which the author seeks to remove an inconvenient competition. The author must, himself, have had the feeling that it would be no easy matter to demonstrate scientifically that Harrogate was necessarily a better Spa for syphilis than Aix-la-Chapelle. Hence he will hardly pursue the question further.

Whether his statements are fully reliable we shall see later on. But first I should like to discuss one of the author's remarks. On page 59 he observes that some of the Harrogate waters have a valuable action in the elimination of the syphilitic poison from the body. It astonishes me that Dr. Solly should have had the courage to enunciate before the Society such a remarkable hypothesis. As a fact, the poison of syphilis is unknown, hence the author can have no knowledge of its elimination. Why, then, does he make an assertion of this kind?

Probably the writer has some vague recollection of the fact that if a sufficient quantity of sulphurous waters be given the end-products of albuminous decomposition are increased. Now as it has been assumed that mercurial ointment rubbed into the skin passes into the lymphatics as an albuminate of mercury, there is some support for the supposition that with the more abundant albuminous decomposition there is associated a more abundant transference of the incorporated mercury.

A second questionable scientific fact is the assertion quoted

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<sup>1</sup> THE JOURNAL OF BALNEOLOGY AND CLIMATOLOGY, vol. ii., part 1, January, 1898.

by Dr. Solly, of Dr. Myrtle (who certainly pays a tribute of acknowledgment to Aix-la-Chapelle), that the treatment is thorough and careful, while he denies any efficacy whatever to the water. To assign this assertion to its proper place I need only refer to the work of Grabower<sup>1</sup> who has found that in an Aix bath there is enough sulphur to convert all the mercury rubbed in into the sulphide of mercury. He has further shown that the HgS, although insoluble, has a mild action on the organism but an energetic influence on the manifestations of the disease.

And now I pass on to the statement that in Aix-la-Chapelle hardly anything is treated except syphilis, and that in consequence every visitor is falsely assumed to have the disease. It is evident that the author speaks neither from his own experience nor from any reliable information, otherwise he would at least have read the official reports of the municipal government. The work of J. Mayers, and the number of cases of gout treated by him, lead to a very different conclusion from the author's. And, moreover, Dr. Solly might have ascertained for himself the object of the numerous douching contrivances, and of the douche and massage attendants in the bathing establishment—these serve exclusively for the treatment of gout and rheumatism; whilst many stay in Aix-la-Chapelle not only for pleasure but also for business.

An equally scant knowledge of Aix is testified by the following criticism of its climate, quoted from Dr. Myrtle (who also resides at Harrogate):—"And as for climate, I found Aix the most depressing, smoky, filthy health resort one could imagine."

Now if it is to become the custom in the future among the various competing health resorts, to destroy each other's reputation by such assertions made without any data, a great injury will be inflicted on the doctors who wish to send their patients for bath treatment. In the midst of all the alleged disadvantages of individual health resorts averred by the opponents concerned, they will not know where to send their patients; or, on the other hand, they will advise their patients to stay at home.

If the situation of Harrogate in the midst of a hilly country is an advantage (p. 59 [3]), the same may be said of Aix, which

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<sup>1</sup> Grabower, *Arch. f. Dermatologie u. Syph.*, bd. xxxi.

lies on the outskirts of the Ardennes mountains, and of the high Venn. These are thickly wooded. In the immediate vicinity of the city there are mountains 346·2 metres (1060 ft.) in height. From the centre of the city one can reach in fifteen minutes by the tramcars a magnificent wooded table-land, traversed for a league by a shady promenade. The mean temperature of Aix averages in spring 9·42° C., in summer 17·55°, in autumn 10·55°, and in winter 3·26.

I think I have sufficiently shown that the *reproaches* made against Aix are unjust. Obviously I should feel it derogatory to say anything disparaging of Harrogate.

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ERRATA.—In the article by Dr. Shaw-Mackenzie which appeared in our last issue, a printer's error occurred on page 26. In the second line of the last paragraph the word "no" should be omitted, and should read "there is room for the extension."

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## Editorials and Notes.

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### COMMERCIALISM IN MEDICINE.

YEAR by year, almost month by month, the thoughtful practitioner finds reason to deplore the decay of those intra-professional amenities which do so much to soften professional asperities. Week by week the medico-ethical column in our respected contemporary, *The British Medical Journal*, furnishes examples of grave breaches of the most elementary principles of conduct, and a very slight acquaintance with the leading London "dailies" is sufficient to show that it is not only the obscure members of the profession who habitually offend against some articles of the ethical code. Breaches of etiquette, though thus unhappily almost universal, have a tendency to specialise into types which are more or less characteristic of the districts in which they occur.

In the metropolis and the larger provincial towns the commonest offence is that of indirect advertising, varying in degree from the paragraph in the fashionable intelligence column of a daily, which tells of the return of Dr. X—— to town, his visit to Lord Z—— at Y—— having terminated, to the substantial article in the society weekly, dealing in eulogistic terms with the new form of treatment recently inaugurated by Dr. So and So for the cure of cancer. Of offenders of this type, probably the greatest criminal is he who uses his professional connection with some illustrious patient as a means of indirectly claiming credit, in the lay press, for a course of treatment which the medical world knows perfectly well to have been due to the labours of others, and who ensures publication of his name in connection with every item of information about the distinguished invalid which the public interest or anxiety may cause to be circulated. Such conduct is quite indefensible, even when regarded from the standpoint of mere taste, and when viewed in the light of the traditions of a great profession it can only be regarded as an outrage. But we live in a commercial age.

Commercialism, in one form or another, pervades the atmosphere of every branch, every aspect of modern life. For good or evil this is our *Zeit-Geist*, moulding everything new and modifying everything old, indefatigable, inscrutable, inexorable. That it should penetrate even into the sanctuary of the Healing Art, distressing as we may find it, is nevertheless only in the nature of things. The principles of high commercialism are advertisement and push; and who can wonder, when these are attended by such conspicuous success in most respectable callings, that they should be imported into the learned professions and should there flourish, in spite of the weight of modern protest and the dignity of ancient tradition?

In the smaller provincial towns, offences against the ethical code do not take this form. There is not the same need for advertisement. Life here is more leisurely, and leaves folk more time for an intelligent interest in their neighbours' affairs. Moreover the doctor is a semi-public man. He is talked about whether he wishes it or not. His goings out are chronicled, and also his comings in. What he said to Mrs. Brown yesterday is related at Mrs. Smith's tea-table to-day. He lives perforce in the public eye, and be he ever so timid and retiring, he is in no danger of being overlooked.

It thus happens that although he cannot escape the *Zeit-Geist*, though commercialism claims him for her very own, the ethical delinquent of the small provincial town need not have recourse to the lay press in order to glorify himself—it is sufficient to pass the word round. And if self-glorification were all—if the unseemly blowing of a discordant trumpet could, as in the case of the metropolitan offender, be regarded as the head and front of the offending—it were much for which to be thankful. But alas! this is not so. The commercialism here is no longer that of the opulent and successful, if somewhat aggressive and vulgar wholesale house; rather is it the commercialism of the small shop-keeper, of whose life, embittered by the sight of his successful rival over the way, even more is given over to detracting from the wares of others than is spent in praising his own. This local manifestation is a peculiarly unlovely thing and—a matter which concerns us very closely—it unfortunately reaches



its highest development in some of our health resorts. In others, Folkestone for example, it is conspicuous by its absence, and we are glad to believe that the relations between the medical practitioners at this station are such as to reflect the greatest credit on themselves and to excite and even compel the respect and admiration of the public. For discreditable and degrading as are the tactics of the *boutique en face* to the character of the man who stoops to employ them, their effect upon the profession at large in the public estimation is a matter of more serious import still. By the majority of laymen, indirect advertising is regarded as a venial offence, a peccadillo which is rather smart and pushful, and does no one any serious harm. Quite otherwise, however, do they regard the petty jealousies, the backbiting, the imputation of evil motives, the thinly-veiled charges of professional incompetence, which pollute the medical atmosphere of so many small places.

Here the question involved is no longer that which occasions so much mirth to the cynic, called Medical Etiquette; it is the ethical code which is considered binding in every civilised, certainly in every Christian community. It is not a question of departure from ancient and honourable tradition so much as flagrant neglect of first principles as laid down in so primitive a code as the Mosaic Decalogue. Such derelictions are readily appreciated by the ordinary citizen, and usually meet with the grave disapproval and contemptuous notice which they undoubtedly merit. The disapproval and contempt are, however, not confined to the delinquents themselves, they are inevitably, if somewhat unjustly, reflected in the general estimate of the whole corporate body of which these are unworthy members.

The circumstances which surround medical practice at some of our health resorts seem unhappily to favour these ebullitions. The professional community is large enough for one member to be unpleasantly conscious of the pressure and rivalry of others, and small enough for each to be fully cognisant of the doings and sayings of each. And then the special methods for treating disease to be found in such places are often the means of bringing about bitter and even violent conflict, in place of that loyalty and *esprit de corps* which a true community of interests should produce.

Instances of such things are all too common, as shown by the local papers which reach us from the various stations in the provinces, and of such instances it would be difficult to find one which is more unseemly than that which has recently been afforded by a health resort on our south-west coast.

In our last issue we called attention to a curious error, into which a representative of the *British Medical Journal* had fallen, in describing a visit to Sidmouth, on the occasion of the opening of the new Sewerage Works. He referred to the Baths and the Nauheim treatment as carried out by an individual member of the profession, omitting all mention of any others. This drew forth a protest signed by all the medical men in the place, including the gentleman whose name was mentioned. The *British Medical Journal* at once gave full publicity to this protest, and expressed its regret that the mistake should have occurred. If the matter had but rested here ; if the protest and the apology had but closed the incident, there would have been nothing except sympathy for the one side and respect for the other.

But what do we find in the local press ? A public meeting of the shareholders of the Baths Company is disfigured by a violent attack upon the gentleman whose name figured in the *Journal*, charging him and his friends with having, of *malice prepense*, inspired the particularism of the account. When this charge is rebutted by the production of a letter from the author of the account, the battle ground is transferred to the public press, and a controversy is initiated in which both the gentleman mentioned and the author of the article are again assailed, and their definite disclaimers of collusion openly called in question.

The assault is opened by one member of the profession and carried on by another, in letters which suggest that time might profitably be spent in studying Lindley Murray as well as Jukes de Styrup, and apparently closes with a letter headed, "The Medical Dispute." The only bright spot to be discovered in this sombre matter is the dignified silence, under very grave provocation, which is maintained by the gentleman who was the innocent and unwilling cause of it all.

It is unnecessary to dwell upon so painful a subject, and we can assure our readers that it has required some little courage to

mention it. It is so much more pleasant to praise than to do the opposite, but feeling as strongly as we do on the necessity for co-operation, *esprit de corps*, and a high standard of ethics among medical men, especially among such as practise at Health Resorts, we are convinced, if these are to prevail, that open censure must take its place beside open eulogy in the exercise of a legitimate remedial function.

#### PHYSICAL METHODS OF CARDIAC TREATMENT.

If anything had been wanting to demonstrate the usefulness of a society devoted to medical balneology and climatology, the discussions which took place at the meetings of the British Balneological and Climatological Society on January 26 and March 2 last, were sufficient to convince the most sceptical. The occasions have been rare when so much interest has been excited by a similar discussion. When it became known that so many gentlemen had expressed their intention to speak, success was assured, and such was the eager and earnest interest shown at both meetings that most of the speakers had to curtail their remarks, and many others were obliged to forego altogether joining in the discussion. In opening the discussion on the first evening Dr. Hyde set himself the task of placing before the meeting a brief history of the special methods of treatment which are generally known as the "Nauheim Treatment," and followed this up by a short exposition of the principles underlying these methods and a judicious and impartial estimate of their present position and value in the treatment of cardiac failure. He was followed by Dr. George Oliver (Harrogate), whose able handling of the more scientific aspect of the subject in relation to the physiological influence of various forms of baths, exercises, and massage upon the blood and circulation, were greatly appreciated by the meeting. Dr. William Ewart pointed out the interest which attaches to the main questions of balnear treatment, hygiene, and climate, and stated that his study of these special methods had enabled him to thankfully avail himself of the new doctrine. Dr. Bezly Thorne, whose practical experience of these methods is great, could not agree with the view of the opener

and others who attributed to the exercises an equal, or greater share in the restorative process as compared with the baths ; and he also stoutly defended his well-known views on the immediate and permanent shrinkage of the cardiac organ after the treatment. Dr. Leonard Williams expressed very emphatic scepticism as to the ability of the best percussor in the world being able to map out reliable areas of dulness with the exactitude of many of the diagrams that had been published. Dr. Alexander Morison agreed with Dr. August Schott that baths should be regarded as a minor form of gymnastics. He was of opinion that erroneous estimates of cardiac shrinkage originally published, had unduly prejudiced many members of the profession against this method of treatment. Dr. Herringham made the interesting statement that amongst poor patients in his hospital practice he had never been able to satisfy himself that either the general condition or individual symptoms of the patient had been improved by exercises or baths. He explained these results, differing from the experience of other speakers, by the difference in the class of patients, the latter including the rich and gouty, in whom "heart disease" meant a different complaint to that of the hospital patient. Another interesting fact was pointed out by Dr. Wethered, who said that it was important to compare the number of beats at the wrist with the number of heart beats as heard by the stethoscope. He stated that he had seen cases in which the number of beats felt at the wrist were apparently less after the baths or exercises, but on comparing the number with the heart beats heard by auscultation, the latter were found to be considerably increased—it would thus appear that there were a number of small beats which did not reach the wrist, and these were missed in taking the wrist pulse. Dr. Havell (Felixstowe) put in a plea for stricter limitations in the application of bath and exercise treatment to heart disease. He was of opinion that the substitution of a rational physical and mechanical treatment for the uncertain weapons of the chemist's shop would be welcomed by the practical physician.

A large gathering again assembled on March 2, when Dr. A. E. Sansom resumed the discussion, and delivered a most interesting address. He expressed the opinion that many of the

outlines purporting to represent the size of the heart before and after Nauheim treatment did not accurately represent the position and size of the heart, owing to a fallacious plan of physical examination, and he placed little value on sphygmographic evidence in favour of the treatment. He admitted the great value of exercise treatment in cardiac failure, but claimed that equally good results could be obtained by simple regulated exercises carried out by the patient himself as by the complicated and costly resistance movements administered by an attendant. Professor Clifford Allbutt also expressed regret that diagrams had been published of conditions of the heart which could not in any possible way be arrived at. He, however, laid special stress upon the fact that every year the treatment of heart disease was becoming less one of drugs and more one of hygiene. Dr. Heron was very sceptical as to either Nauheim water or the special exercises possessing any peculiar value over other forms of baths and exercises in cardiac treatment. This brought up Dr. Bezly Thorne, who stoutly defended the opposite views and frankly and unreservedly accepted the responsibility of largely making use of sphygmographic tracings taken under his direction by hospital trained nurses. Dr Harry Campbell was of opinion that muscular exercise was infinitely the most valuable stimulant of the heart, whilst Dr. Shirley Jones (Droitwich), Dr. Fortescue Fox (Strathpeffer), Dr. Louis Blanc (Aix-les-Bains), and Dr. Black Jones (Llangammarch) inclined to the view that the baths form a potent factor in the treatment. Dr Kingscote stated that he had obtained nearly the same effects with compressed air in the baths as with carbonic acid, and recommended the inhalation of free oxygen both during the baths and the exercises. Dr. C. W. Chapman was of opinion that long-continued observation of patients subjected to the treatment was necessary, in order to arrive at a true estimation of results. Dr. E. Symes Thompson, who was prevented being present, wrote to say that he had long recognised the value of baths and had been greatly impressed of late with the effects of effervescing baths in cardiac and neurotic cases. He also stated that the careful application of resisted movements had done more than digitalis in rehabilitating the

heart when compensation was defective. Dr. Andrew Myrtle (Harrogate) agreed with the opinion that much benefit can be obtained by the carefully applied routine treatment of baths and ordinary exercise in cardiac failure ; an opinion which his exceptionally long experience of such practice has fully confirmed.

From the foregoing rapid summary it will be seen that the discussion was the most complete and exhaustive exposition of English medical opinion upon this important and interesting subject which has yet taken place, and we are glad to be able to give a full report in the present issue of the Journal, which will doubtless prove a valuable addition to the literature dealing with the subject of the physical methods of cardiac therapeutics.

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## Reviews and Notices of Books.

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POPULAR GUIDE TO THE USE OF THE BATH WATERS. By J. G. Douglas Kerr, M.B., C.M. Eleventh Edition. Bath: Herald Office, North Gate. Price 1s.

That this small work has attained wide popularity is evidenced by the fact that it is now in its eleventh edition. Within the compass of 133 pages, Dr. Douglas Kerr has succeeded in bringing together much valuable information about the ancient and celebrated waters and baths of Bath. The various diseases which are benefited by the treatment are described, as well as those in which it is contra-indicated. Much useful information as to the course of the treatment, including the best times for drinking the waters and taking the baths, the precautions to be observed by the patient in using the same, and a clear and comprehensive description of the many adjuncts of treatment which are available at Bath, is given. To those who desire a condensed and reliable guide to the use of Bath Waters, this treatise of Dr. Douglas Kerr can be highly recommended.

INAUGURAL ADDRESS ON MEDICAL GEOGRAPHY AS AN AID TO CLINICAL MEDICINE. ALSO PHTHISIS AND THE ISLE OF MAN. By Alfred Haviland, M.R.C.S. London: John Bale, Sons & Danielsson, Ltd. 1897. Price 1s.

Many members of the profession who are interested in the study of medical geography and climatology will feel grateful to the author for having these two addresses republished in the present handy and convenient form. The subject of the geographical distribution of disease is of much more importance than is generally recognised, and Dr. Haviland does well to press the importance of its study as a valuable aid to clinical medicine. The present small *brochure* contains two maps, one coloured, which illustrate in graphical and easily understood form the teachings of the author.

THE MEDICAL ANNUAL. Sixteenth Year. 1898. Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. Edinburgh: Young J. Pentland. Glasgow: A. Stenhouse. New York: E. B. Treat & Co. Calcutta: Thacker, Spink & Co. Paris: Boyveau & Chevillet. Melbourne, Sydney, Adelaide and Brisbane: G. Robertson & Co. Sydney: Angus & Robertson. Toronto: J. A. Carveth & Co. Price 7s. 6d. net.

It is with unfeigned pleasure we welcome another issue of this useful work. It would be invidious to select for special praise any

single part where the whole is so good. Suffice it to say that the various branches are in the hands of known and capable writers who have done their best to sustain the high standard of previous editions. The general arrangement and illustrations are excellent, and one cannot but wonder at the moderate price at which the volume is produced. No practitioner can afford to be without such a useful and valuable epitome of the progress of practical medicine and surgery. It is simply indispensable.

CHELTHENHAM AND ITS MINERAL WATERS. By G. H. Ward-Humphreys, L.R.C.P., M.R.C.S. London: John Bale, Sons & Danielsson, Ltd. 1898.

The substance of this little work appeared originally in the pages of the *Quarterly Medical Journal*, but is now published in separate form. Cheltenham, like some other Spas, has had its period of prosperity and its season of decadence. It is, however, gratifying to find that the once famous Gloucestershire Spa is again coming into public favour. Many earnest efforts have been made of late to promote this object, and Dr. Ward-Humphreys is to be congratulated not only upon his efforts to influence the public authorities of the town in this direction, but upon the issue of this charming little treatise, which gives such a concise and well-written account of the town, its climate, and its mineral waters.

GEOGRAPHICAL DISTRIBUTION OF TROPICAL DISEASES IN AFRICA. By R. W. Felkin, M.D., F.R.C.S., F.R.G.S. Edinburgh: William F. Clay, 18, Teviot Place. 1895. Price 3s. 6d. net.

These pages, treating of the climatology of Africa and the distribution of disease in that continent, were written at the request of the Committee of the African Ethnological Congress which met at Chicago in 1893. Such a work at the present juncture, when Africa is attracting so many immigrants from European countries, cannot but be of interest to the medical profession. The assumption that the Anglo-Saxon race can live and thrive more or less all over the world is capable of leading to disastrous results, and it cannot be too strongly impressed upon governments, exploitation companies and private individuals interested in the opening up of parts of the globe hitherto inhabited by other races of men, that the physical conditions of soil, vegetation, temperature, and other factors of climate are often intolerable to white races of men. Much can be done, however, towards avoiding or mitigating the evils referred to, by spreading a knowledge of the physical conditions of the various regions which are likely to exert a deleterious influence upon the organism of the European settler. Hence this work, dealing with the tropical diseases of Africa and their geographical distribution over that vast continent, will be welcomed by many. Dr. Felkin has



had considerable experience in this special department of medicine, and his views and suggestions are worthy of respectful consideration. The work contains an appendix on a new method of illustrating the geographical distribution of disease, which will be read with interest.

CAIRO OF TO-DAY. By E. A. Reynolds-Ball, B.A., F.R.G.S.  
London: Adam & Charles Black. 1898. Price 2s. 6d.

To those—and they are many nowadays—who contemplate a visit to the land of the Pharaohs, we can with confidence recommend this admirable guide by Mr. E. A. Ball, who is well known as a writer of other similar works. The information it contains is ample and reliable, whilst being concisely and clearly expressed. The book is enriched with several capital maps, and is printed in excellent type.

DOCTOR AND PATIENT. By Robert Gersuny, M.D., with a Preface by D. J. Leech, M.D., F.R.C.P. Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd.; Hirschfeld Bros., 82, High Holborn. 1898. Price 2s. net.

We had the pleasure of noticing a similar work to the above by Dr. West in a former issue, and welcome the present volume. It is one of the best signs of the times that the subject of medical ethics is receiving more frequent notice at the hands of medical writers to-day than formerly. The present little work is a translation of a book published by Dr. Gersuny, of Vienna. As to its character, we need only quote from the admirable preface by Prof. D. J. Leech, who says: "English medical men will be able to see set forth the views taken by a distinguished member of the profession in Vienna of the duties of medical men towards themselves, their colleagues, and the public. They will see that our profession in England and abroad has common principles of conduct. They may note, indeed, some difference between the views entertained as to the course of conduct which should be pursued in certain exigencies, and those which are held in this country, but they cannot fail to rise from the perusal of Dr. Gersuny's book without feeling better for the wise counsel he gives, and without having received an incentive to do that which is right and maintain at its highest point the honourable position of the profession."

ALLGEMEINE UND SPECIELLE BALNEOTHERAPIE MIT BERUICKSICHTIGUNG DER KLIMATOTHERAPIE. Von Dr. Karl Grube. Arzt in Neuenahr. Berlin: Verlag von August Hirschwald. 1897.

In this work the author draws special attention to the climatological and hygienic conditions of water cure resorts, and deplures that these matters do not receive more consideration. It is much to be desired, he says, that places claiming the proud distinction of health resorts should be altogether free from the danger of typhoid and

other preventable diseases. Dr. Grube lays stress upon the baneful influence of dust, which he declares should be unknown in these places. He treats of the physiological and therapeutical effects of simple water, and of climate; also the effects of mineral waters, and of bath treatment in general. There is also an interesting chapter on balneo-therapy. In the last chapter Dr. Grube describes various places where the water cure is carried out, mentioning the most important Spas, including some in the United Kingdom.

BAD GASTEIN, NACH DEN NEUESTEN HILFSQUELLEN BEARBEITET. Von Dr. Carl Gager, Königl. Rath, Doctor der Medicin und Chirurgie. Berlin: Verlag von August Hirschwald. 1897.

In his preface, Dr. Carl Gager informs us that as doctor residing in Bad Gastein since 1882, he feels that he is in a position to give important information on the subject of the thermal waters of Gastein. The book is divided into two parts. In the first portion the author gives a very interesting account of the history of Gastein, the waters of which appear to have had a very early reputation. We have here, also, useful observations of the physiological and therapeutical effects of the waters and climate as well as the general principles of treatment at this Spa. The work contains much valuable and useful information, including descriptions of buildings, excursions, and particulars of hotels, and prices of things in general. The high altitude of Gastein insures great purity of air, and although there are frequent rains, the roads dry very quickly. The prevailing winds are south or south-west. The wind seldom blows from the north. The death-rate is said to be very low, and epidemic diseases rare. The book contains several beautiful engravings, which give to it a pleasing appearance.

SPECIELLE DIATETIK UND HYGIENE DES LUNGEN-UND KEHLKOPF-SCHWINDSUCHTIGEN. Von Dr. Felix Blumenfeld, Wiesbaden. Berlin: Verlag von August Hirschwald. 1897.

The object of Dr. Felix Blumenfeld in writing this book is to give a special mode of diet for phthisical patients. The work treats on the general care of the body, and describes the sports that should be followed, the clothing that should be worn, &c. He also shows how seemingly simple illnesses may become complicated, and deals fully with fevers of all kinds. Dr. Blumenfeld also gives a good description of bronchial and other lung affections.

ALLGEMEINE BRUNNENDIATETIK, ANLEITUNG ZUM GEBRAUCHE, VON TRINK-UND BADEKUREN. Von Dr. J. Biessel, Königlicher Bade-Inspektor für Aachen und Burtscheid. Berlin: Verlag von August Hirschwald. 1897.

Dr. Biessel is the Royal Inspector of Baths at Aachen, and it is with this Spa he deals in the present work. He gives a very good

account of the best way to journey to Aix-la-Chapelle, the best time of the year for cure, and the most suitable clothing to be worn during treatment. He also describes the diet, &c., of the people taking the baths and drinking the waters, placing importance upon strict attention to other hygienic rules being observed by patients taking the treatment.

**ON MATERNAL SYPHILIS, INCLUDING THE PRESENCE AND RECOGNITION OF SYPHILITIC PELVIC DISEASE IN WOMEN.** By John A. Shaw-Mackenzie, M.D.Lond. London: J. and A. Churchill. 1898. Price 10s. 6d.

It is pretty generally admitted, nowadays, that in many pelvic troubles in women, syphilis is a factor which plays a more frequent part than was formerly admitted. The profession is indebted to Dr. Shaw-Mackenzie for a very clear and comprehensive discussion of the whole subject of maternal syphilis in the volume before us. The work consists of ten chapters. In the first chapter the author deals with primary syphilitic disease. The second chapter deals with extra-genital syphilis. The third chapter is taken up with a discussion of the manifestations of syphilis in women. Chapter IV. treats of syphilis in pregnancy, sterility, and abortion. Chapter V. deals with sub-involution, menorrhagia and metrorrhagia. The sixth chapter describes syphilis of the anus and rectum. In Chapter VII. the relations of syphilis to the nervous system, skin, &c., are dealt with. The eighth and ninth chapters are devoted to the subject of immunity and the tenth chapter discusses the treatment of syphilis. Under the latter head Dr. Shaw-Mackenzie passes in review the methods which have found favour with various authorities. On the somewhat vexed question of the best mode of administering mercury in syphilis, he says, "Every one is, perhaps, inclined to favour the method of treatment he is most familiar with, and I cannot myself claim exemption from a confidence in the external methods of administration of mercury." In this Dr. Shaw-Mackenzie is an enthusiastic disciple of Mr. Henry Lee.

As useful adjuncts to mercurial treatment by the external methods of inunction and fumigation he recommends the regular use of hot water baths and Turkish baths. He is also in the habit of using the drug in the form of a vaginal pessary or of a rectal suppository in some cases. Sulphur, in Dr. Shaw-Mackenzie's opinion, is also beneficial in many forms of the disease. The treatment by the waters of certain Spas, such as Aix-la-Chapelle, Harrogate, and Strathpeffer, is also useful, and the advantages of good climatic influences are recognised. Altogether the work is a thoughtful and comprehensive survey of an important and interesting subject which will well repay careful study.

### Notes, News and Items.

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**ELECTION OF FELLOWS.**—At an ordinary meeting of the Society, held at 20, Hanover Square, on March 2, 1898, the following candidates were balloted for and elected Fellows of the British Balneological and Climatological Society:—J. R. MacMahon, M.B., 49, Earl's Court Road, S.W.; B. H. Lyne Stevens, M.D., M.R.C.S., 107, Park Street, W.; W. Bezly Thorne, M.D., 53, Upper Brook Street, London; Stuart C. M. Nourse, M.R.C.S., L.R.C.P., Clacton-on-Sea; Macpherson Lawrie, M.D., Weymouth.

ON the same date the following gentlemen were elected corresponding Fellows of the Society:—W. H. Gilbert, M.D., Baden-Baden, Germany; Karl Grube, M.D., Neuenahr, Germany.

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By the will of the late Mr. William Freeman, F.R.C.S., of Bath, £1,000 is bequeathed to the Middlesex Hospital "for the development of obstetric scholarship."

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THE Second Annual Meeting of the subscribers to the Passmore Cottage Hospital, Liskeard, has just been held. The report showed a total expenditure of £304 and receipts £506. There were 76 admissions of patients during the year.

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THE financial statement of the Royal West of England Sanatorium, Weston-super-Mare, for 1897, shows receipts including a balance of £667 from the previous year, amounting to £4,140, and expenditure £2,786. The number of convalescent patients admitted during 1897 was 1,481.

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AT the Annual Meeting of the Royal Bath Hospital, Harrogate, the report showed that the total admissions for 1897 had been 914. Since the previous annual meeting Mr. Butler had offered to contribute £500 to the Home Endowment Fund.

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IN the Report of the Southern Dispensary, Bath, for the year 1897, we find that 665 patients were under treatment during the year and that the majority of these were treated at their own homes. A balance of £54 remained in the hands of the Treasurer.

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THE Report of the Torbay Hospital, Torquay, for 1897, gives the total expenditure as £2,019, leaving a deficit balance of £63.

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THE Report of the Committee of Management of the Devonshire Hospital, Buxton, for the year 1897, shows an income of £7,604 16s. 5d. and an expenditure of £7,620 14s. 2d., leaving an adverse balance of £15 17s. 9d. 2,769 in-patients and 241 out-patients were under treatment during the year.

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IN the Annual Report for 1897 of the Medical Officer of Health for Falmouth, Dr. W. King Bullmore gives the death rate as 15·7 per 1,000. There were twenty-six cases of zymotic disease notified with a death rate of 2·1 per 1,000.

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THE Medical Officer of Health for Torquay reports for 1897 a death rate of 15 per 1,000, being the lowest death rate for some years. If the seventy-seven cases entered as visitors be excluded, the rate would be 12 per 1,000. Only eleven deaths were due to zymotic disease, equal to a rate of 0·43 per 1,000.

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AT a recent meeting of the Baths Committee of Bath, a resolution was passed expressing great satisfaction with the result of the Mayor's Conference with the medical men of Bath desiring them to form an advisory Board, to whom medical questions arising in connection with the management of the baths might be referred by the Baths Committee when advisable.

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THE Congress of the Italian Medical Association of Hydrology and Climatology was held at Parma on the 3rd, 4th, and 5th inst.

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THE ninth public meeting of the German Balneological Society was held in Berlin during the second week of March.

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The President, Professor Liebreich, delivered the opening address. The following communications were made to the Society: The Question of Contagiousness of Tuberculosis, by Dr. Römpler, of Görbersdorf; The Effect of so-called Indifferent Mineral Waters, by Professor Liebreich; The Hydrotherapy of Simple Ulcer of the Stomach, by Professor Winternitz, of Vienna; and Vegetable Diet Cures, by Dr. Strasser, of Vienna.

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THE Fifth National Congress of Hydrology, Climatology and Geology, will take place at Liège, September 25 to October 1 of the present year, under the patronage of H.R.H. Prince Albert of Belgium. Among the Honorary Presidents is M. De Bruyn, Minister of Agriculture and Public Works. The President of the Organising Committee is Professor G. Dewalque, the Vice-President being Dr. V. Desguin, President of the Royal Academy of Medicine, Belgium. The General Secretary is Dr. J. Jorissenne, of Liège. The work of the Congress will be divided among three sections: (1) Medical Hydrology; (2) Medical Geology, including General Hydrology, and (3) Climatology. French, Flemish, German, or English may be used in the discussions.

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OPEN-AIR TREATMENT OF CONSUMPTION.—Since the discussion of this subject before the British Balneological and Climatological Society in the Spring of last year, considerable attention has been given to the subject, and several attempts have already been made to extend the system in this country. In this connection we would particularly mention the institution which is carried on at Poole Road, Bournemouth. This house has been specially arranged for the reception of patients suffering from tuberculous disease, and the treatment is carried out under the personal and immediate supervision of a local physician. Medical men and others desiring fuller information can obtain the same from the Matron, Miss Harrison.

---

DR. THURSFIELD having recently retired from the Mayoralty of Leamington after three years' service has just been presented with a testimonial in recognition of his services. The testimonial took the form of a set of silver candlesticks, and gold watches

for Dr. and Mrs. Thursfield, the sum of £200 having been subscribed for the purpose. Viscount Peel, who was present on the occasion, spoke in eulogistic terms of Dr. Thursfield's public services in connection with Leamington.

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THE eighth annual meeting of the Hungarian Balneological Congress was held on March 27 and 28, at Buda Pesth, under the Presidency of Dr. Wilhelm Tauffer. Among the papers contributed were—one on the Balneo-Therapy of Heart Disease, by Dr. Franz Tausyk; one on the Treatment of Consumptive Patients in Sanatoria and Climatic Health Resorts, by Professor Adolf Onodi; and another on the Hungarian Health Resorts, from the balneological point of view, by Dr. Josef Sumegi.

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LITERARY NOTE.—The Rebman Publishing Co.'s new books include a new "Pocket Formula for the Treatment of Disease in Children," by Dr. L. Freyberger, of the Great Northern Central Hospital, London; and a work on "Surgical Diagnosis and Treatment," by J. W. Macdonald, M.D.Ed.

They also announce the completion of their "Pictorial Atlas of Skin Diseases" (St. Louis Hospital Museum, Paris), edited by J. J. Pringle, M.B., F.R.C.P.

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"HYPODERMULES" (Rogers').—We have received specimens of this ingenious and useful arrangement for ensuring the purity and exact dosage of hypodermic medication. The Hypodermules consist of minute glass flasks in shape of a port wine bottle. These are filled with a certain number of minims of a solution of any given drug. To use one of the Hypodermules the neck is broken off, the needle of the syringe inserted, and the solution extracted. As the solutions are carefully sterilised and introduced direct into the flasks, absolute sterility is claimed. Another advantage claimed is that the solutions cannot increase in strength by concentration, however long they may be kept. We think the Hypodermules will prove very useful.

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## Exchanges.

THE MEDICAL MAGAZINE, February, 1898.  
 TREATMENT, January, 14, 28; February 10, 24; March 10, 1898.  
 QUARTERLY MEDICAL JOURNAL, January, 1898.  
 WEST LONDON MEDICAL JOURNAL, January, 1898.  
 BIRMINGHAM MEDICAL REVIEW, February, March, 1898.  
 LIVERPOOL MEDICO-CHIRURGICAL JOURNAL, January, 1898.  
 THE HOSPITAL, January 15, 22, 29; February 5, 12, 19, 26; March 4, 12, 1898.  
 REVISTA DE CIENCIAS MEDICAS, January, February and March, 1898.  
 AUSTRALIAN MEDICAL GAZETTE, December, 1897.  
 THE MEDICAL WORLD, March 5, 1898.  
 PUBLIC HEALTH ENGINEER, March 5, 1898.  
 EXTRACTS FROM VIEWS AND REVIEWS, PENZANCE. Special Edition.

## Notices.

### TO CONTRIBUTORS.

Literary communications, books for review, &c., should be addressed to the EDITOR, c/o Publishers, Oxford House, 85-89, Great Titchfield Street, London, W.

Suitable articles, climatological reports, vital statistics, and reports of current events from health resorts are invited.

Correspondents must attest their communications with their proper names and addresses (not necessarily for publication).

Contributions should be written *on one side* of the paper only.

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The insertion of any letter or article bearing a name or *nom de plume*, in these columns, does not necessarily indicate our adhesion to the views or statements contained therein.

Correspondence relating to general business should be addressed to the Publishers, JOHN BALE, SONS & DANIELSSON, LTD., 85-89, Great Titchfield Street, London, W.

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THE ACTION OF CERTAIN DRUGS AND MINERAL  
WATERS ON THE SECRETION AND COMPOSITION OF HUMAN BILE: AN EXPERIMENTAL  
INVESTIGATION.<sup>1</sup>

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(ABSTRACT.)

THE investigation of cholagogues is one of the most difficult in the whole domain of pharmacology. The importance of the subject is shown by the number of laborious researches undertaken to determine the action of drugs which are supposed to influence the secretion of bile and its complexity by the contradictory results obtained. As nearly all recent experimental evidence casts doubt on the existence of so-called cholagogues, it occurred to me that the time would be well spent if I could contribute, even in a minor degree, towards a solution of this very difficult problem. While arrangements were being completed for carrying out a series of investigations on dogs by means of Schiff's amphibolic biliary fistula in the physiological laboratory of St. Thomas's Hospital I was informed that a patient with a

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<sup>1</sup> Read before the Brit. Bal. and Clim. Society, April 27, 1898.

permanent cutaneous biliary fistula had just left the institution. An interview was immediately arranged with this man, who readily consented to place himself at my disposal for experimental purposes.

In mentioning the history of the patient I wish to acknowledge Dr. Payne's kindness in permitting a reference to the notes of the case.

The patient, male, aged 49, was admitted into St. Thomas's Hospital, under the care of Dr. Payne, on July 19, 1897, and was operated upon by Mr. Anderson on the 29th of the same month. At the operation the gall bladder was found tensely distended and contained clear fluid. The cause of the obstruction in the common bile duct was not ascertained, though a careful search was made. The opinion expressed at the time was that it was probably due to a small impacted gall-stone. As the patient ten months later was in a satisfactory state of health this view is probably correct. He was discharged from the hospital on October 20. During his stay there his stools were always clay coloured. His weight on admission was 9 st., on his discharge, 8 st. 9 lbs.

When he came under my notice on November 7, his health was moderately good. He was anæmic and troubled more or less with flatulence but no organic disease could be detected. His appetite was good and he took a moderate amount of exercise. He lodged close to the hospital and brought the bile and urine each day to the laboratory. His height was 5 feet 1 inch and his weight on November 11, without clothes, 58 kilogrammes (9 st. 2 lbs). He only varied 2 lbs. while under my observation and during the latter part of the period he "felt much better and stronger." His bowels were moved naturally once a day after leaving the hospital but this action was subsequently modified by the drugs taken. His diet was as follows :—

At 9, breakfast : egg, lean bacon, tea and bread.

At 11, luncheon : one pint of porter.

At 1.30, dinner : mutton or beef, potatoes and bread. Occasionally he had fish. Water.

At 5.30 : tea, bread and butter.

I asked him to take the same amount of food, liquid and exercise each day and impressed upon him the necessity for abiding by these rules as otherwise my results would be vitiated. In addition he took 36 grains of purified oxbile daily (12 grains at 10 a.m., and at 2 and 6 p.m.), thus approximating the experimental conditions to the normal standard.

*Method of Collecting the Bile.*—Arbuthnot Lane's biliary tube was employed, which answered the purpose admirably. By means of sticking-plaster the shield was kept in absolute contact with the skin so that not a drop of bile was lost. The inner was fastened to the outer tube with a small safety pin to prevent traction. The outer end of the collecting tube was firmly attached to an india-rubber urinal fitted with a stop-cock. This allowed the patient to collect the bile at stated times without in any way disturbing the connections. The tube was changed about once a week. During the seventy days the case was under observation only on two occasions was there any oozing, due to an insufficiency of plaster.

The bile was collected four times a day, at 8 a.m., at 12 noon, at 4 p.m., and 8 p.m., and put into different sized bottles properly labelled. The specific gravity of each sample was taken at the laboratory temperature, the same hydrometer being used throughout. Then the four specimens were put into one bottle, shaken, and a portion reserved for analysis.

*Method of Analysis.*—Bile solids: The weight of the capsule was first ascertained, 25 cc. of bile measured (the same pipette was always used for this and for estimating the bile salts) and weighed, then evaporated to dryness over a water bath at a temperature of 100° C. The capsule was next placed in a hot air chamber kept at a temperature of 110° C. by means of a gas regulating apparatus for at least three hours. After that it was placed in a exsiccator until its weight was constant.

Bile salts: To 25 cc. of bile, about 120 cc. of methylated spirit was added, and the whole filtered. The filtrate and washings were evaporated to dryness over a water bath and extracted with absolute alcohol. The extract was then evaporated to a small volume and two-thirds of its volume of anhydrous ether added. This was allowed to stand in a cool place for three days

and the precipitate of bile salts was then collected on a weighed filter. The filtrate was again evaporated to dryness, extracted and precipitated as before, and any further precipitate collected on the same filter. The filter was finally dried at 105° C. to constant weight.

I take this opportunity of expressing my gratitude to Dr. Brodie for his advice and for many acts of kindness. I also have to thank Dr. Sikes, demonstrator of physiology, for analysing the bile and urine on two occasions during my absence.

For the purpose of comparing results I will briefly mention the salient facts in the published cases of human biliary fistula.

Monro<sup>1</sup> mentions a case of abscess of the liver where the bile was discharged by coughing, mixed with mucus and saliva. The quantity varied from 10 to 15 oz. in the twenty-four hours. It was irregular in flow and greater in quantity after dinner.

Charles Robin<sup>2</sup> mentions a case of Taconi's where a patient had a biliary fistula. The bile amounted to 500 grammes in the twenty-four hours.

Harley<sup>3</sup> describes a case of hydatids of the liver where the bile was discharged through a fistulous opening, the quantity varying from 16 to 20 oz.

Murchison<sup>4</sup> records a case of biliary fistula where the bile flowed at the rate of 1 to 2 oz. per hour, usually increasing after meals.

Frerichs<sup>5</sup> quotes a case of Rouis where 900 grammes of bile a day was expectorated.

Ranke<sup>6</sup> records a case of hydatid disease of the liver where a communication existed between the bile passages and a bronchus. Sometimes the bile was expectorated, while at others it passed into the duodenum. He gives the results of five observations of twenty-four hours' duration when the fæces gave no indication of biliary constituents. The patient had chronic bronchitis and allowance had to be made for the secretion from the respiratory passages. The average of these observations gives 636 cc. of bile with 20·6 grammes solid.

Noel<sup>7</sup> mentions a case of biliary fistula. On one occasion 900 grammes of bile were secreted in the twenty-four hours with a specific gravity of 1·0097.

Von Wittich<sup>8</sup> has published a case where a biliary fistula formed spontaneously on account of an impacted gall-stone. He collected the bile for four hours during the day, and for ten hours during the night, and from these data he calculated the amount in the twenty-four hours.

Westphalen<sup>9</sup> describes a case of liver abscess, where the bile found its way into the right pleura and subsequently after thoracocentesis through the thoracic wall. Taking the average of seventeen days the bile amounted to 498 grammes with 11·266 grammes solid. The bile was analysed by Jacobsen. Westphalen tried the effects of water, calomel, and quinine on the biliary secretion. He found that large quantities of water did not increase the secretion nor alter the composition of bile. Calomel and quinine had no effect.

Yeo and Herroun<sup>10</sup> made a number of observations on a case of fistula due to cancer of the common duct. The patient was very ill at the time and took little nourishment. The average quantity of bile secreted during the twenty-four hours only amounted to 374 cc. with 5·044 grammes solid. No difference in the rate of secretion was noticed after the small meals taken by the patient.

Hammersten<sup>11</sup> records seven cases of biliary fistula, but in all of them a part of the bile found its way into the intestine. The percentage of solids in his cases varied from 1·63 to 3·53 per cent.

Edington<sup>12</sup> published a case of biliary fistula, but the obstruction was incomplete, so that some of the bile escaped into the duodenum.

The next four cases are important, as the patients, apart from the fistula, were in good health at the time of observation and the obstruction was complete.

Copeman and Winston<sup>13</sup> record a case of biliary fistula in which the average amount of bile secreted in the twenty-four hours was 779 cc. with 11·094 grammes solids. They endeavoured to determine the variations in the flow of bile in relation to time and meals.

Mayo Robson<sup>14</sup> reports some interesting observations which he made on a case of biliary fistula. The quantity of bile col-

lected on various dates during the time the patient was in hospital averaged 850 cc. Mr. Fairley analysed the bile on two occasions : the mean gives 15.28 grammes solids. Mr. Robson investigated the action of the following drugs : calomel, rhubarb, podophyllin, carbonate of soda, iridin, euonymin, turpentine, and benzoate of soda. Unfortunately, Mr. Robson did not analyse the bile while these experiments were being carried out ; he only gives the total quantities collected. He found that iridin increased the flow temporarily, while aerated soda water had the same effect without a subsequent fall. The other drugs had no effect.

Noel Paton and Balfour<sup>15</sup> describe a case of biliary fistula where they made a number of careful observations. They experimented with salicylate of soda, calomel and oxbile, but at the time the patient was suffering from a moderately high temperature so that little importance can be attached to their results. They found that salicylate of soda increased both the quantity and the solids, and that although oxbile and calomel influenced the secretion they were less active than the soda salt. A year later, when the patient's health was re-established, Paton<sup>16</sup> had the opportunity of analysing her bile on two successive days. The mean of these observations gave 590 cc. of bile with 13.6 grammes solids.

The last recorded case is by Pfaff and Balch.<sup>17</sup> Their observations extended over ninety-seven days, and were of a painstaking character. The average of three days without drugs gives 514 cc. with 8.57 grammes solids. They tried on their patient calomel, corrosive sublimate, salol, oxbile, human bile, and bile salts. Calomel and corrosive sublimate had no effect ; if anything, the quantity was diminished, whereas the percentage of solids did not vary from normal. Salol had some influence, but not pronounced enough to justify them in asserting that it was a cholagogue. Human bile, oxbile and bile salts increased both the quantity and the solids.

*The Amount of Secretion in Twenty-four Hours.*—In taking the average of the daily amount of bile, I excluded those days during which drugs were used and also the day subsequent to the administration of any drug. Thus the average of sixteen days



gave 775 cc. of bile ; the average of nine days 15·893 grammes solids, and the average of six days 4·197 grammes bile salts. To save repetition I may state that when the term *without medication* is used it refers to these sixteen days. The specific gravity varied during the period without medication from 1·0079 to 1·012. A glance at Table I. will reveal the fact that the quantity of bile in my case is very similar to that of Copeman's and Winston's, but in mine the total solids are much higher. This I attribute to my patient taking oxbile daily, and also a fair amount of exercise in the open air, while theirs was confined to the wards of a hospital.

TABLE I. (MODIFIED FROM GAMGEE<sup>18</sup>).—EXHIBITING THE RESULTS OF DIFFERENT OBSERVERS ON THE SECRETION OF BILE AND BILE SOLIDS (DURING TWENTY-FOUR HOURS) IN THE HUMAN SUBJECT.

	Ranke	Von Wittich	West- phalen	Yeo and Herroun	Copeman and Win- ston	Mayo Robson	Paton and Balfour	Pfaff and Balch	Bain
Sex ... ..	M.	F.	M.	M.	F.	F.	F.	F.	M.
Weight in kilo- grammes	47	...	...	...	43·7	53	73	51	58
Bile secreted in cc.	636	532	498	374·5	779	849	590	514	775
Bile solids in grammes	20·6	...	11·27	5·04	11·09	15·28	13·596	8·57	15·893
Bile secreted per kilo of body	13·52 cc.	...	...	...	17·8 cc.	16·0 cc.	8·08 cc.	10·27 cc.	13·36 cc.
Bile solids se- creted per kilo of body	0·44 grms.	...	...	...	0·25 grms.	0·28 grms.	0·186 grms.	0·168 grms.	0·274 grms.

During the period without medication the smallest quantity of bile was secreted on January 20 (670 cc.) ; the largest amount on November 11 (864 cc.). Similarly, the smallest quantity of solids was secreted on January 24 (15·139 grammes) ; whilst the largest was on January 11 (16·640 grammes).

*Variations in the Rate of Secretion.*—There is abundant proof that the rate of secretion is very irregular, but the conditions which operate to produce this irregularity in flow are, to a certain extent, conjectural. The two most potent factors are probably diet and exercise. It is generally admitted that during digestion the secretion of bile is active, but there is a lack of experimental evidence regarding the kinds of diet which most influences the secretion. It appears probable that exercise augments the biliary

secretion, but if the exercise produces much perspiration this effect will be annulled. The evidence I have to adduce in support of this statement is exceedingly meagre. On two occasions when the patient was not having drugs, circumstances arose which compelled him to take more than his usual exercise. In these two instances the quantity of bile was increased. An average of the days without medication gives the following quantities :—

From 8 to 12 p.m.	...	...	147·7 cc.
„ 12 to 4 p.m.	...	...	165·1 cc.
„ 4 to 8 p.m.	...	...	148 cc.
„ 8 to 8 a.m.	...	...	312·6 cc.

It will be observed that there is a rise from 12 to 4 which coincides with the principal meal of the day, and the quantity secreted during the day, 471 cc., is much larger than that during the night, 312 cc.

The colour of the bile was always of an olive green, the only variation observed being in depth of tint.

The bile was invariably alkaline in reaction.

*Pressure of Bile Secretion.*—Only one observation was made on December 14, at 3.45 p.m., when the pressure was found to be equal to 16 mm. of mercury. This is much less than the mean of Paton's and Balfour's observations, 24 mm. of mercury.

Dr. Samuel Fenwick<sup>19</sup> has made numerous observations upon the amount of sulphocyanate of potash in the saliva in both health and disease. He noticed a marked decrease in the amount when the activity of the nutritional functions was diminished, and in serious febrile affections he regards an increase as an element of favourable prognostic significance. He expresses his belief that the sulphocyanate salt is derived from the biliary salts after they enter the duodenum, and he bases this opinion on the statement that when the bile is prevented from reaching the alimentary canal, as he says happens in one form of dyspepsia characterised by eructations of sulphuretted hydrogen gas, he found the sulphocyanate salt invariably absent from the saliva. If Dr. Fenwick's hypothesis be correct the salt must be absent from the saliva when the common bile duct is occluded. In order to test this point the patient was asked to discontinue

the oxbile pills during the Christmas holidays. His saliva was then examined on several occasions and the sulphocyanate salt was always present, although the quantity was diminished. His saliva was also examined while he was taking oxbile, but no difference in the reaction could be detected.

*The Influence of Drugs on the Secretion of Bile.*—Before describing my results it would be advantageous to refer very briefly to the experiments performed on dogs in relation to this subject.

Nasse<sup>20</sup> was the first to investigate cholagogues. He gave 1 gramme of calomel to a dog with a permanent biliary fistula, and came to the conclusion that calomel increased the quantity of bile but diminished the bile solids.

Kolliker and Muller<sup>21</sup> tried calomel and aloes without effect.

Mosler<sup>22</sup> and Scott<sup>23</sup> found that calomel did not increase the amount of bile. Indeed the latter said it produced a diminution in the quantity and in the solids. These four experimented on dogs with permanent biliary fistula.

The committee of which Hughes Bennett<sup>24</sup> was chairman decided that mercuric chloride, calomel, and pil. hydrargyri did not increase the flow of bile.

Rohrig<sup>25</sup> experimented on curarised dogs and rabbits. He counted the drops of bile flowing from the canula inserted into the opened gall bladder—a method open to criticism. Moreover he gave such large doses (30 drops of croton oil) that his results must be of little value.

Rutherford's<sup>26</sup> elaborate researches are so well known that a *résumé* is unnecessary. Rutherford asserts that whatever increases the quantity of bile similarly affects the solids, and for that reason he did not consider it necessary to estimate the solids in the greater number of his experiments. I maintain that there are drugs which increase the solids, without materially affecting the quantity of the bile, and therefore that it is incumbent upon the investigator to estimate the solids in all his experiments. Further, I consider the total solids are a more important guide to the influence of a drug on the liver than the quantity of bile secreted. Rutherford attaches great importance to the relationship existing between the quantity of bile secreted and the body

weight of the animal. He bases almost all his conclusions upon this supposed relationship—a relationship, however, which is disproved by referring to Table I. Apart from these criticisms my results, so far as they go, confirm in the main Rutherford's experiments.

Rosenberg<sup>37</sup> used dogs with permanent biliary fistula. He found salicylate of soda, olive oil, and fats to be cholagogues, the last two being the most powerful. Durand's mixture and Carlsbad salts gave negative results.

Battistini<sup>38</sup> found santonin to be the best cholagogue and in this is corroborated by Marfori.<sup>39</sup>

Prevost and Binet<sup>30</sup> declared that bile itself was the most powerful cholagogue, but turpentine, chlorate of potash, benzoate and salicylate of soda, salol, euonymin and muscarin were effective. Amongst doubtful substances they placed Carlsbad salts.

Baldi<sup>31</sup> tried podophyllin, rhubarb, jalap, sodium phosphate, pilocarpine and Carlsbad water without effect, but oxbile increased the amount and the solids.

Kunkel<sup>32</sup> tried large quantities of water, but the quantity of bile was not increased, nor were the solids affected.

Lewaschew<sup>33</sup> found salicylate of soda effectual.

Paschk<sup>34</sup> and Niessen<sup>35</sup> obtained negative results with all cholagogues except bile. Since 1890 Stadelmann and his pupils Niessen, Mandelstamm,<sup>36</sup> Müller,<sup>37</sup> Lowenton,<sup>38</sup> and Glass<sup>39</sup> have conducted a series of careful investigations of cholagogues. Stadelmann,<sup>40</sup> summarising the results of these investigations, shows that bile, and possibly salicylate of soda, alone act as cholagogues. He strongly condemns the practice of drawing comparative conclusions regarding the secretion of bile from experiments extending over short periods of time.

Gamgee,<sup>41</sup> commenting on the diversity of these results suspends his judgment until a fresh research is undertaken on dogs by means of Schiff's amphibolic biliary fistula. While I agree with him regarding the value of evidence derived from experiments carried out by Schiff's method, it is my belief that fairly reliable results can be obtained in cases of human biliary fistula by the administration of oxbile during the entire

investigation. Further, although dogs are more easily controlled than human beings as regards food, liquid and exercise, it is a much more difficult matter in their case to collect the bile without loss.

In Table II. I have drawn up a series of averages which will help to elucidate my conclusions. Some of the estimations of the bile salts unfortunately miscarried, so that on several occasions the average of bile salts is for a less number of days than those on which a particular drug was given. This also applies in a few instances to the bile solids.

TABLE II.—SHOWING THE AVERAGE AMOUNT OF BILE, BILE SOLIDS, AND BILE SALTS ON THE DAYS DURING WHICH CERTAIN DRUGS OR MINERAL WATERS WERE GIVEN.

Drugs Administered	Quantity of Bile in ccm.	BILE SOLIDS		BILE SALTS	
		Total in Grammes	Per cent.	Total in Grammes	Per cent.
Without medication ...	775	15·893	2·07	4·197	·55
Old Sulphur Spring ...	878	18·584	2·14	5·870	·69
Kissingen Spa... ..	845	16·330	1·97	4·734	·55
Carlsbad mineral water ...	809	18·352	2·24	5·560	·68
Euonymin ... ..	836	17·300	2·03	5·031	·60
Benzoate of soda ... ..	856	18·514	2·16	...	...
Salicylate of soda ... ..	797	17·215	2·14	5·462	·68
Iridin ... ..	788	17·764	2·35	5·088	·68
Podophyllo-resin ... ..	744	18·714	2·48	5·774	·73
Podophyllo-toxin ... ..	758	14·311	1·88	4·044	·56
Strong Montpellier Spa ...	747	15·318	2·00	3·853	·50
Chloride of Iron Spa... ..	808	17·314	2·10	5·241	·64
Pint of hot water ... ..	785	16·519	2·09	4·207	·53
Pint of soda water ... ..	783	16·612	2·10	...	...

The influence of the Harrogate mineral waters on the secretion of bile has never been tested experimentally, and as I am interested in this particular branch of therapeutics I began the investigation with them. It should be stated that the waters were sent up to London in bottles, and kept in the laboratory some time before being used.

*The Old Sulphur Spring.*—The strong sulphur water generally acts as a mild laxative. If the bowels are moved naturally once a day the only difference it causes as a rule is that the evacuations are more copious, and this was the effect upon my patient. An average of four days gave 878 cc. of bile with 18·5 grammes solid.

There is no doubt that this water has a very decided effect

on the secretion and composition of bile, and I shall show in another paper that this effect is due to stimulation of the hepatic cells. As this water contains sulphuretted hydrogen gas it is possible the effect would have been greater had it been taken at its source.

No other drug or mineral water with which I experimented produced such a striking increase in both the quantity of bile and bile solids as the Old Sulphur Springs.

*Strong Montpelier Spring.*—The average of five days shows a diminution in the quantity of bile, in the bile solids, and bile salts: therefore, this water is not a cholagogue. Hunter, in Allbutt's system of medicine, asserts that the beneficial effects of most of the natural mineral waters are due to a flushing out of the biliary system. In the face of this and other experiments it is difficult to see how his hypothesis can be maintained.

*Kissingen Spa.*—The average of four days shows a distinct increase in the quantity of bile, and a slight increase in the solids. The patient had a sharp attack of flatulent dyspepsia one night when he was taking this water, which necessitated the administration of two small doses of brandy. If this day's secretion be omitted the average rises to 875 cc. of bile with 16.6 grammes solids: therefore the action of the Kissingen water is to increase considerably the quantity of bile without materially augmenting the total solids.

*Chloride of Iron Spa.*—This water is prescribed for cases of anæmia. It was given to test the alleged effect of iron in reducing the quantity of bile. It should be stated, however, that in addition to iron it contains a large quantity of chloride of sodium, and appreciable quantities of the chlorides of calcium magnesium, barium, and potash. The dose given was much larger than usual, but it did not disagree. The average of 806 cc. is somewhat misleading. The day before commencing the water the quantity of bile was 820 cc., and the day after it was stopped the quantity rose to 864 cc., and the solids to 19.457 grammes. It was my intention to have repeated this experiment, but time did not permit. The marked rise both in the quantity and the solids on the day after the last administration is a feature of interest.

In regard to the Harrogate waters it is a point of clinical interest that the relative empirical reputations of the Old Sulphur and the Strong Montpellier Springs are experimentally sustained.

*Carlsbad Mineral Water.*—The patient took 10 ozs. before breakfast, and 10 ozs. at bedtime. The second dose purged him seven times. The next day he had 6 ozs. before breakfast, and 4 ozs. at bedtime. The average of the two days gave 809 cc. of bile with 18·3 grammes solids. The quantity would be higher were it not for the depletion produced by the purging.

Notwithstanding the negative results obtained by other investigators I have no hesitation in saying that the high esteem in which this mineral water is held as a cholagogue is undoubtedly deserved.

*A Pint of Hot Water before Breakfast.*—This was given on one occasion. The result was 785 cc. of bile with 16·5 grammes solids.

*A Pint of Soda Water before Breakfast.*—This was also taken on one occasion. The result was 783 cc. of bile with 16·6 grammes solids.

In both instances the quantity of bile was scarcely affected, but there was a very slight increase in the solids,

*Euonymin.*—The average of five days gave 836 cc. of bile with 17·3 grammes solids, but this does not convey an accurate idea of its effect in relation to the quantity. The patient took 12 grains on the first day, which purged him six times, with a consequent diminution in the quantity of bile, which spoilt the average. It is interesting to note that the solids were the highest on this day. On the last two days the drug was taken the quantity was 940 cc. and 904 cc. respectively—a very considerable increase: therefore euonymin unquestionably increases the quantity of bile, and, to a less extent, the bile solids.

*Iridin.*—The average of four days gave 788 cc. of bile, and the average of two days 17·7 grammes solids. From a consideration of these figures one can safely say that iridin does affect the complex chemical processes which take place in the liver without increasing the quantity of the bile.

*Benzoate of Soda.*—This drug was exhibited on one occasion, and in one dose of 20 grains. The result was 856 cc. of bile

with 18.5 grammes solids. It is undesirable to express an opinion regarding the efficacy of a drug from merely one observation, but I should like to point out that the considerable rise in the total solids can scarcely be regarded as a coincidence, because during the days without medication the solids never exceeded 17 grammes.

*Salicylate of Soda.*—An average of two days gave 797 cc. of bile with 17.2 grammes solids and the day after the discontinuance of the drug the solids rose to 18.3 grammes: therefore there can be no doubt that it does influence the metabolism of the liver. During its administration the patient suffered a part of one day from indigestion, which might possibly have inhibited the biliary secretion.

With one exception (Niessen) all investigators are agreed that this substance increases the secretion of bile.

*Podophyllo-resin.*—This is a resinous subject extracted from *Podophyllum Emodi* by Professor Dunstan,<sup>42</sup> for a sample of which I am indebted to Dr. Dixon. It was given in non-purgative doses. The average of two days gave 744 cc. of bile with 18.7 grammes solids. This is rather misleading, as regards quantity. The day before the drug was given the quantity was only 670 cc., the first day of administration 710 cc., the second day, 779 cc., and the day after its discontinuance the quantity rose to 817 cc. with 17 grammes solids. The increase in the solids is the highest of all substances tested, therefore I think this drug has a decidedly stimulating effect on the liver.

*Podophyllo-toxin.*—This is another extract of *Podophyllum Emodi*, also extracted by Professor Dunstan.<sup>43</sup> It was given on one occasion, and although the doses were supposed to be non-purgative it acted twice on the bowels. The result was 758 cc. bile with 14.3 grammes solids, and the day after the solids fell to 13.9 grammes, the lowest during the investigation: consequently this substance seems to have an adverse influence on the biliary secretion.

*Analysis of the Urine.*—It was not deemed desirable to ask the patient to bring his urine until he became familiar with collecting his bile. The object in analysing the urine was to obtain an approximate idea of the amount of nitrogen excreted and there-



by an indication of the quantity of nitrogenous food assimilated. This end could be more accurately attained by adopting some modification of Kjeldahl's process, but I wished to ascertain the action of the drugs used on the excretion of urea and uric acid. Unfortunately, the urine was frequently either neutral or faintly acid, so that conclusions drawn from the results obtained would probably be fallacious. Various expedients were tried to prevent its decomposition, but without much success. The quantity of urine was above the average—about 2,000 cc., and the specific gravity rarely exceeded 1.010. The colour, considering the quantity, appeared to be normal. Although it was examined repeatedly for albumen no trace was detected.

For the estimation of urea Hufner's hypobromite method was employed.

For estimating uric acid Hopkins' long process was used until January 7, when I tried Otto Folin's modification of Hopkins' short method. This consists essentially in substituting 10 grammes of ammonium sulphate for saturation with ammonium chloride in a 100 cc. of urine, and subsequently washing the precipitate with a 10 per cent. solution of ammonium sulphate, instead of a saturated solution of ammonium chloride. Folin's method is expeditious, but I do not think it is reliable when the urine is concentrated, and it was found with the dilute urine of my patient that two hours were insufficient for complete precipitation. The uric acid was observed to be increased while the patient was taking salicylate of soda, and to a slight extent, during the administration of euonymin. Noel Paton<sup>43</sup> found that euonymin increased while salicylate and benzoate of soda markedly diminished the excretion of uric acid. Hopkins, in Schafer's physiology, states that the salicylates undoubtedly increase the quantity of uric acid in the urine.

For estimating creatine Johnson's method was adopted, but a very small amount of the mercurial compound always adhered to the flask, hence a margin of error is introduced into the result.

For the estimation of ammonia Schloesing's method was adopted, but it is unsatisfactory for clinical purposes because of the length of time required. As the urea kept persistently below

the normal in this case it was considered probable that the ammonia would be increased in consequence of the diminished formation of urea. Neubauer<sup>1</sup> found the quantity of ammonia to vary in health from .3 to 1.2 grammes in the twenty-four hours and this has been confirmed by later observers. In my patient it varied from 1.04 to 1.4 grammes, but it is doubtful whether this slight augmentation is due to the feeble reaction of the urine or to diminished functional activity of the liver.

#### SUMMARY OF CONCLUSIONS.

(1) The amount of bile secreted in the twenty-four hours in a man somewhat below medium height and weight averages 775 cc., and the bile solids 15.8 grammes.

(2) More bile is secreted during the day than at night.

(3) The sulphocyanate of potash in the saliva is not derived from the biliary salts.

(4) The following substances increase both the quantity of bile and bile solids :—Old Sulphur Spring (Harrogate), Carlsbad mineral water, euonymin, benzoate of soda, salicylate of soda, and Kissingen Spa (Harrogate).

(5) Podophyllo-resin and iridin augment the bile solids without appreciably affecting the quantity of bile.

(6) Strong Montpellier Spring (Harrogate), and podophyllo-toxin appear to diminish slightly both the quantity and the solids.

(7) Hot water and soda water in pint doses do not seem to increase the biliary secretion.

(8) Salicylate of soda increases the excretion of uric acid in the urine.

<sup>1</sup> Monro. "Cyclopædia of Anatomy and Physiology," London, 1839-1847, p. 180.

<sup>2</sup> Charles Robin's *Leçons sur les humeurs normales et morbides du corps de l'homme*, Paris, 1867.

<sup>3</sup> Harley. *Med. Chirurg. Trans.*, 1866, p. 89.

<sup>4</sup> Murchison. "Diseases of the Liver," third edition, p. 576.

<sup>5</sup> Frerich's *Klinik der Leberkrank.*, bd. ii., p. 130.

<sup>6</sup> Ranke. *Die Blutvertheilung und die Thatigkeitswechsel der Organe*, Leipzig, 1871, Chap. VIII.

<sup>7</sup> Noel. *Journal de Pharmacie et de Chimie*, III., vol. xxxi., p. 354, Paris.

- <sup>8</sup> Von Wittich. *Arch. d. ges. Physiol.*, bd. vi., p. 181.
- <sup>9</sup> Westphalen. *Deutsche Arch. f. klin. Med.*, vol. xi., p. 588.
- <sup>10</sup> Yeo and Herroun. *Journal of Physiology*, vol. v., p. 116, 1884.
- <sup>11</sup> Hammersten. *Maly's Jahres-Bericht der Thier-Chemie*, 1894, p. 331.
- <sup>12</sup> Edington. *Journal of Anatomy and Physiology*, 1896.
- <sup>13</sup> Copeman and Whinston. *Journal of Physiology*, vol. x., p. 213.
- <sup>14</sup> Mayo Robson. "Proceedings of the Royal Society," vol. xlvii., p. 499.
- <sup>15</sup> Noel Paton and Balfour. "Laboratory Reports, Royal College of Physicians," Edin., vol. iii., 1891.
- <sup>16</sup> Paton. "Laboratory Reports, Royal College of Physicians," Edin., vol. iv., 1892.
- <sup>17</sup> Pfaff and Balch. *Journal of Experimental Medicine*, New York, January 1897, p. 49.
- <sup>18</sup> Gamgee. "Physiological Chemistry of the Animal Body," vol. ii., p. 277.
- <sup>19</sup> Fenwick. "The Saliva as a Test for Functional Disorders of the Liver," 8vo, London, 1889.
- <sup>20</sup> J. H. Nasse. *Commentati de bilis quotidie a cane secreta copia et indolie*, quoted by Rutherford.
- <sup>21</sup> Kolliker and Müller. *Beitrag zur Lehre von der Galle*, Wurzburger Verhandlungen, vol. v., 1855.
- <sup>22</sup> Mosler. *Virchow's Archiv.*, bd. xiii., p. 29, 1858.
- <sup>23</sup> G. Scott. *Beale's Archives of Medicine*, vol. i., p. 209.
- <sup>24</sup> Hughes Bennett. "British Association Reports," 1868.
- <sup>25</sup> Röhrig. *Experimentelle Untersuchungen über die Physiologie der Gallenabsonderung*, Wiener Med. Jahrbücher, 1873, p. 240.
- <sup>26</sup> Rutherford. *Transactions of the Royal Society*, Edinburgh, vol. xxix., 1879.
- <sup>27</sup> Rosenberg. *Pflüger's Archiv.*, 1890, bd. 46, p. 334.
- <sup>28</sup> Battistini. *Moleschott's Untersuchungen*, xiii., p. 414, 1888.
- <sup>29</sup> Marfori. *Sulla pretesa azione colagoga della Sahltonia. Annali di Chimica e di farmacologia*. Ser. 4, vol. x., p. 153.
- <sup>30</sup> Prevost and Binet. *Recherches Experimentales relative a l'action des médicaments sur la Secretion Biliare, et a leur elimination per cette secretion. Revue Medicale de la Suisse Romande*, No. 520, Mai, 1888.
- <sup>31</sup> Baldi. *Archiv. ital. de Biologie*, tome iii., p. 389.
- <sup>32</sup> Kunkel. *Pflüger's Archiv.*, xv., p. 353.
- <sup>33</sup> Lewaschew. *Ztschr. f. klin. Med.*, Berlin, 1884, bd. viii., s. 67.
- <sup>34</sup> Paschkis' *Ueber Chologoga*, Med. Jahrbücher, 1884, p. 159.
- <sup>35</sup> Niessen. *Maly's Jahresbericht*, 1890, p. 280.
- <sup>36</sup> Mandelstamm. *Ueber den Einfluss einiger Arzneimittel auf Secretion und Zusammensetzung der Galle*, Inaug. Diss. Dorpat, 1890.
- <sup>37</sup> Müller. *Ueber den Einfluss einiger pharmakologischer Mittel auf Secretion und Zusammensetzung der Galle*, Inaug. Diss. Dorpat, 1890.
- <sup>38</sup> Loewenton. *Experimentelle Untersuchungen über den Einfluss einiger Abfuhrmittel und der Clysmata auf Secretion und Zusammensetzung der Galle, sowie denen Wirkung bir Gallenabwesenheit im Darne*, Inaug. Diss. Dorpat, 1891.
- <sup>39</sup> Glass. *Ueber den Einfluss einiger Natron salze auf Secretion und Alkaliengehalt der Galle*, Inaug. Diss. Dorpat, 1892, and *Archiv. f. exp. Path. u. Pharmak.*, vol. xxx. (1892), pp. 241-274.
- <sup>40</sup> Stadelmann. *Therapeutische Monatshefte*, 1891, p. 511.

<sup>41</sup> Gamgee. "Textbook of Physiological Chemistry," vol. ii., p. 374.

<sup>42</sup> Dunstan and Henry. *Chemical Society's Transactions*, March, 1898.

<sup>43</sup> Paton. *British Medical Journal*, 1886, vol. i., p. 435.

<sup>44</sup> Neubauer. *Journal f. Prakt. Chem.*, Leipsig, 1852, bd. lxiv., s. 177.

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## GOUT AND RHEUMATISM IN RELATION TO THE SEASHORE AND SALT BATHS.<sup>1</sup>

BY EDMUND HOBHOUSE, M.D., M.R.C.P.LOND. (BRIGHTON.)

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MR. PRESIDENT AND GENTLEMEN,—I hope that you will regard this paper rather as an attempt to elicit a discussion, than as embodying the results of a lengthy experience. There must be many here far better qualified than myself to speak on this subject, and I can only hope that my words will draw some expression of opinion from those with a longer experience than mine. The fact is that with diseases so prolonged in their course, so liable to intermissions and remissions as chronic rheumatism and gout, so protean in their aspects, it requires a life-long experience to form any reliable opinion as to what are the effects on them of any particular climate, conditions, or modes of treatment. Acute rheumatism is on a somewhat different footing, but even here we want to know rather what the effect is on the tendency, inherited, or diathetic, or whatever we may call it, to acute attacks rather than on the attacks themselves, which must be treated where they arise; from that point of view we may regard even acute rheumatism as in some sense a chronic disease, because the tendency to it once manifested persists through a great number of years, if not through life, and there is a constant danger of relapse.

As regards rheumatism, the question is much complicated by the fact that we have to recognise several different kinds, the

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<sup>1</sup> Read before the British Balneological and Climatological Society on April 27, 1898.

effect on which of any kind of treatment, climate or otherwise, is very different. Moreover, the term rheumatic is used as a residual diagnosis, to explain the existence of many aches and pains of which we can give no better account, and as to the pathology of which in fact opinions differ widely. Besides the well recognised forms of lumbago and sciatica, there are very numerous indefinite myalgias and neuralgias which are of doubtful origin, and are classed by some writers under gouty, by others under rheumatic conditions.


The upshot is that in dealing with rheumatic affections generally, we are dealing with a very doubtful quantity apart from the definite group of acute rheumatism, and the same remark applies to gouty affections.

Though influenced largely by the same meteorological and climate conditions as gout and rheumatism, chronic rheumatic arthritis is now regarded by almost all authorities as a separate disease and should be dealt with accordingly.

Taking rheumatism first and speaking generally, I must confess to feeling very sceptical as to whether sea air in itself has any direct effect on rheumatic troubles apart from the question of the dryness of the soil, the prevailing winds, the amount of precipitation and of sunshine, and the aspect of the place. The question thus becomes one rather of the individual advantages or disadvantages of any particular seaside place in these respects than of the general effects of sea air. It is also largely a question of the particular atmospheric conditions at any given season of the year. Thus during the autumn and winter months, when chilly fogs and damp cold are prevalent over a large part of the inland country and London, rheumatic patients will do far better and be much freer from their complaint, if they go to some place on the south coast with a dry soil and a large amount of sunshine; whilst on the other hand, during the prevalence of the east winds in March and early April, they will probably be less exposed to their influence elsewhere. This is especially the case in regard to any patients afflicted with any form of facial neuralgia, whether rheumatic or otherwise, in whom the cold winds that blow on an open sea front are almost certain to induce an attack.

Personally I am inclined to attach more importance to a dry soil, and one that will absorb moisture quickly, than to any other factor, though the amount of sun and the absence of land fog to be obtained at many places on the south coast are also important considerations. The only way I know in which one can obtain evidence on such a point is to ask every rheumatic patient how they feel by the seaside, and then chronicle their answers accurately ; at the end of some years one would have a valuable body of evidence. My impression is strongly that their answer would vary very much according to the seaside resorts they had frequented. Owing to the fact that pain is an almost invariable accompaniment of any rheumatic manifestation, rheumatic patients generally have very definite ideas as to what places have or have not agreed with them, and if they have tried a place for a sufficiently long time or sufficiently often to eliminate other possible influences, they can generally be trusted as to the effects of that place on their symptoms. But as in all else the effects vary very greatly in individual cases, *e.g.*, Egypt is generally said to be, and I believe rightly, an admirable resort for chronic rheumatoid arthritis in the winter, yet I well remember meeting two patients afflicted with this, one in Cairo, one up the Nile, both of whom told me they had never suffered so much pain before as during their stay there. It would require, therefore, a very large number of cases to be tabulated before we could formulate any definite conclusions, and I would suggest to members of the Society that the tabulation of cases on a fixed plan by members in different resorts would form a very valuable addition to the collective investigation of disease. I believe that a frank statement of the cases for which a health resort is unsuitable as well as of those for which it is suitable, is the best way for it to maintain a high reputation ; the advent of cases that go away worse rather than better must harm it in the long run.

There is one class of rheumatic cases on which statistics are fairly obtainable, at least as regards Brighton, *viz.*, the acute and subacute forms, but unfortunately they are just the cases in which the immediate surroundings of the patients probably have almost as much effect as the general climatic conditions. Further, it is



more than doubtful whether rheumatic fever has the same ætiology as the various troubles which we class as chronic rheumatism, and it does not seem to be specially prevalent in low damp localities, or towns where chronic rheumatic disorders so called are common. I thought, however, that it might be of some interest to the members of this society in reference to the very important question of ætiology of the disease, if I analysed the statistics of the Sussex County Hospital on this point.

Some deduction has to be made in these statistics from the fact that patients are admitted from all parts of the county whose cases can have nothing to do with the seashore.

<sup>1</sup> If we take these returns since 1868, we find that the average percentage of cases of acute and subacute rheumatism compared with the total medical is 7·02, but during many years the subacute were not classified separately, the bulk probably passed under chronic, so that the average was too low. The total rheumatic cases anyhow reached 11·8.

Now if we take three great London Hospitals, St. Bartholomew's, St. Thomas's, and the London, we find that the average of subacute and acute cases is something over 10 per cent. of the total medical cases.

If we take other seaside places, *e.g.*, Hastings, the returns (which are available for nine years only, and therefore not very reliable), give a percentage of 10·5 annually of acute and subacute cases, though it is stated in the climate and health resorts of Great Britain that the acute form occurs less common than elsewhere, chronic forms being common.

At Plymouth the acute and subacute cases constitute 4·51 of the total medical, but chronic forms bring it up to 10·40, a fact which may be either accounted for by the moister Devonshire climate, giving rise as it probably does to much more chronic, rheumatism, or by the presence of a considerable sea-faring population amongst whom rheumatism is notoriously prevalent or by a mixture of both causes.

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<sup>1</sup> (N.B.—After writing the following my friend, Dr. Newsholme, kindly furnished me with figures, which were more exhaustive, and upset my conclusions. I have therefore had to rewrite it.)

In the out-patient room I do not find that rheumatism is a common disease. Taking 1,000 cases of all kinds, I find that I only put down two as acute rheumatism, and seven as subacute with four chorea.

Eight cases appear as chronic rheumatism, eleven as sciatica and lumbago, and six as rheumatoid arthritis, while seven are noted as of doubtful rheumatic character. Thus there are only forty-five cases altogether of rheumatism of all kinds, including rheumatic arthritis and seven doubtful cases. Diagnosis in the out-patient room is of course of an uncertain character, but on the whole the tendency is rather to make a diagnosis of rheumatism in doubtful cases than the reverse. I have no London out-patient statistics to compare with these figures, but I am inclined to believe that the proportion of rheumatic cases of all kinds would give a much higher percentage. These were the only actual statistics available with reference to seaside places, and they are too meagre to make any very valuable deductions but such as they are, they seem to show that the sea has no special influence on the acute and subacute forms of rheumatism, and further in conjunction with other statistics which I will not now quote, that these forms do not bear any definite ratio to the more chronic troubles. On this point, however, it is extremely difficult to form an opinion because the minor forms come so little under hospital treatments.

Looking at the whole matter I should say that marine climates are not indicated in the treatment of rheumatic affections, though patients in a weak and anæmic condition after acute and subacute attacks often benefit greatly from the tonic influences of the air and do not tend to relapse.

In the report of the Medico-Chirurgical Society's Committee on the Climates and Baths of Great Britain, though definite statistics are not given, many of the seaside resorts report that rheumatism is a common disease, by which they seem to mean chronic rheumatism. Thus of Shanklin it is said that rheumatism and neuralgia are common, and aggravated by the influence of the seashore as compared with the downs; of Bournemouth "The value of this climate in rheumatic complaints is more than doubtful;" of Weston—amongst other persons who



ought not to visit Weston are those suffering from rheumatism because it is a common complaint here." Of Ventnor we hear that rheumatism is not uncommon; chiefly subacute, but that chronic rheumatism and rheumatoid arthritis are benefited during the winter.

The report from Bude specifies that the air is rather predisposing to rheumatism, rheumatoid arthritis and neuralgia.

In fact there is hardly a resort of any importance in which it is not noted that chronic rheumatism is a common disease. In many instances, however, it is noted that acute rheumatism is uncommon and this bears out what I said before about the frequent absence of any relation between the prevalence of acute and chronic rheumatism.

I cannot help thinking that many of the opinions chronicled in that report are derived chiefly from private practice, in which rheumatic fever is comparatively a rare disease, and that if accurate hospital statistics were forthcoming it would appear in many places to be commoner than is supposed. Whatever its origin, malnutrition, dirt, and absence of air and sunlight with consequent anæmia, strongly predispose to it. There is one form of true rheumatism, viz., the rheumatism of young children, which it is my impression does well by the seaside; at least the few cases that I have seen on the Riviera and in this country have done well. I would beg those of wider experience than myself to say something on this point. It is only of late years that the full significance of those often slight recurrent articular pains or obscure febriculæ in children have been recognised, and we still need more light on their origin, nature and prophylaxis. I do not think it is any exaggeration to say that this would prove to be the most important question in connection with rheumatism, if we could only see fully the number of lives that are crippled by chronic heart trouble due to such attacks passing unrecognised. For those of us who live by the sea, where children are gathered in schools by the thousand, it is of supreme weight, and a systematic investigation of the question whether children, with rheumatic tendencies ought, or ought not to be sent to school by the seaside would be of very great practical value.

As regards the more chronic conditions, lumbago, sciatica,

muscular rheumatism, myalgia, neuralgia and ill-defined arthritic troubles, they are, I think, as frequently associated with gout and gouty tendencies as with rheumatic, but cold and damp are often the determining causes of an attack. I have already noted that nearly all seaside resorts speak of them as being common especially the more western, which have a moister climate than Kent and Sussex. They are very common in most places in England, especially on damp clay soil, but it is practically impossible to determine their relative prevalence, as they neither come much into hospitals,<sup>1</sup> nor are they fatal diseases.

As to the good or otherwise such cases get at the seaside it follows from what has been said, that much depends on the place they choose, on the residence they select there, and on the time of year ; in the autumn and early winter, they will probably be better off on the south coast, and during the spring winds, they are safer in some sheltered inland place. With regard to patients with outspoken gout it is less difficult to speak ; those with any active symptom are far better away from the sea altogether, and if they get an attack there, should get away as soon as possible afterwards. The worst attack of articular gout I ever saw was on the Riviera in a very gouty patient, who went on from week to week for ten or twelve weeks till almost every joint in his body had been affected, and he finally had to be carried off in an invalid carriage ; when he got away he began slowly to mend. Numbers of gouty people do live at the seaside, and manage to be fairly comfortable, but they have to be even more careful about their diet, and especially in the avoidance of beer and other injurious drinks than elsewhere. The bracing sea climates certainly predispose to what Murchison called lithæmia. Whether the view put forward by Sir Wm. Roberts that sodium salts are especially injurious in gout, has any bearing on this point I cannot say, but it is certain, that in some conditions of the atmosphere, anyone living close to the sea must take a considerable amount of aqueous vapour saturated with salts into their lungs in the course of twenty-four hours.

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(<sup>1</sup> So far as my out-patient figures go they are not very common in Brighton and neighbourhood, about 3·4 per cent.)

As regards rheumatoid arthritis, I will only say this, that it arises in all climates and all places ; so far as my experience goes it is not commoner in Brighton than in other places. At least in out-patient practice it is not a common disease. It is said, and I believe truly, that many rheumatoid patients feel more pain at the seaside than elsewhere, but that they are not worse in other respects.

There is but little time left to discuss the question of salt-water baths in gout and rheumatism, and I do not think it would be wise to open up a subject which would require considerable discussion and is of more importance to those who practise in inland resorts than at the seaside. The fact is, that very few, if any patients come to the sea for the purpose of taking sea baths, at least for the diseases in question, and there are comparatively speaking no facilities for giving regular courses at any seaside resorts.

I will only say that a year's experience of the treatment of rheumatic patients of all kinds by waters of which the chief constituent was sodium chloride, has convinced me of the great value of hot baths, especially in sub-acute rheumatic cases, but not that the virtue resides in the salt or any other mineral constituent of the water. The most striking results I know and the most free from criticism, are those obtained at the U.S. Military Hospital at Arkansas Hot Springs. The waters are hot, but practically neutral, containing only some 8·5 grains of salts—chiefly calcium carbonate and silicates—to the gallon, yet of the patients sent there, all bad cases previously treated at other military hospitals without success, 45 per cent. are returned as able to go back to military duty. This is a very severe test, and as the hospital has now been in existence many years with uniformly good results, it is strong evidence to my mind that the virtue of baths, so far as rheumatism goes, lies chiefly in their heat, and not their constituents. I do not on this account advocate such treatment being carried out at home ; on the contrary, the benefit is largely obtained from its being done at a regular resort under skilled care and by skilled attendants with entire change of regime, air, and surroundings. I have seen the injudicious use of hot baths do considerable harm to patients,

especially to cases of rheumatoid arthritis, and with this caution I will bring these desultory remarks to a close, thanking you for the patience with which you have listened to them.

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**"OUR FATHERS HAVE TAUGHT US."**

BY LEONARD B. WILLIAMS, M.B., C.M.

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WHO was Staff-Surgeon Jebb? Alas! I know not. A number of volumes recently came into my possession which once belonged to him. They are beautifully bound in calf with curious copy-book-marbled fly leaves, and markers of purple silk ribbon, now much faded. In most of them there is a severely simple book-plate, innocent of crest or other device, bearing the name of Staff-Surgeon Jebb in bold yet unaggressive copper-plate. These books deal exclusively with medical or allied subjects, and the majority were published in London between 1815 and 1827.

Of the personality of their former owner but little is to be gleaned from these volumes. The presence of foot and marginal notes suggest that he was an attentive and somewhat critical reader, while the neatness of the pencilling and the conciseness of the wording of the annotations clearly show that his military training had not been lost upon him. It might perhaps be possible to deduce some further hints of his tastes and habits, if any good purpose could be thereby served. The one fact, which is of interest to us here, is that a large proportion of these books treat wholly, or in part, of Baths and Mineral Waters. Whatever else he was then, Staff-Surgeon Jebb was a balneologist.

Whether among medical men of his time he was peculiar in this respect, it is difficult now to say. At the beginning of the period in question George III. was King, and during his pathetic affliction, his son, "the finest gentleman in Europe," was Regent. Bath, in Somerset, was at the zenith of its former glory, and

thither the Prince and his companions would repair, to recover the fatigues of the season by taking the waters. The fashion thus set was echoed at other Spas, Leamington, Cheltenham, Buxton, Tonbridge, and Harrogate were places of resort for the valetudinarian and the pleasure seeker. Moreover, balneology was in the air. About 1820 arose Priessnitz, the Silesian farmer, the apostle of water as a therapeutic agent, the originator of hydropathy, the father of modern hydro-therapeutic treatment.

On the other hand, a wave of purely scientific influence was passing over the medical world. In 1819 Laennec published his "*Traité de l'auscultation Mediate*," a work which so revolutionised the hitherto accepted methods of estimating the nature and extent of disease, as to produce a feeling of revulsion against means of treatment which were merely empirical, even when these had stood the test of centuries of observation and experience.

It must be admitted that the books in question reveal no evidences whatever either of Laennec's teaching or of the anti-empirical spirit which it evoked. We may therefore assume that Staff-Surgeon Jebb was a balneologist of the older order, and that his practice as such, was conducted on good broad principles, untrammelled by the limitations and contra-indications imposed by such a new fangled bauble as a stethoscope.

It may be of interest to endeavour briefly to ascertain, in the light of these volumes, how far we have advanced in the knowledge of balneology, and wherein the practice of the present day differs from that which was in vogue during the period which immediately succeeded the close of the Napoleonic wars. For this purpose one book may be taken as typical of the rest epitomising as it appears to do, in language quaint yet succinct, the then accepted canons of the art.

The title-page describes it as "*An Essay on Warm, Cold and Vapour Bathing, with Practical Observations on Sea Bathing, Diseases of the Skin, Bilious, Liver Complaints and Dropsy*," by Sir Arthur Clarke, M.D., Member of the Royal College of Surgeons, London; Surgeon and Agent to His Majesty's Sick and Wounded Seamen and Marines at Dublin; Physician to St. George's Dispensary and House of Recovery; and author of the

Mothers' Medical Assistant. London : Printed for H. Colburn and Co., Conduit Street, 1820.

The work is dedicated to Her Grace, the Duchess of Leinster, in a letter which, though doubtless in accord with the taste and custom of the time, now appears fulsome to the point of servility, recalling, as it does, the language at first held by Dr. Johnson to his haughty patron, Chesterfield.

"The little treatise, which now in a fifth edition, solicits from your Grace that protection formerly accorded to it by the illustrious nobleman with whom your destinies are happily united, claims a sort of domestic privilege in thus transferring its homage without forfeiting its allegiance. . . ."

Though we may deplore, with Burke, that the age of chivalry is gone, to be succeeded by that of sophisters, economists, and calculators, it is hardly to be regretted that this form of preface has disappeared from the modern scientific work. There are some things which even age cannot dignify. In the "advertisement" to this fifth edition the author deprecatingly informs us with charming *naïveté*, that "though he is himself the proprietor of one of the largest establishments of baths in the United Kingdom, he trusts it will be found he has discussed the subject with impartiality." In this he has certainly succeeded. There is no suspicion of partisanship or special pleading in aught that follows. The matter is handled simply and satisfactorily, and according to the lights of those days, scientifically.

The enumeration of methods of employing water for bathing purposes which appears early in the book, has the advantage of placing no tax upon the memory. To us, impressed as we seem to be with the importance of needle-baths, hot douches, local douches, dry douches, *et id omne genus*, the following classification is elementary in the extreme.

"According to the mode in which baths are employed, they are usually distinguished into *general* or *partial*. General when the body is plunged or immersed in water, to which the term *bathing* is more strictly applied; and when the water is thrown over the body by means of an apparatus which causes it to descend in a shower, it is called a *shower bath*. This last method is by medical men sometimes termed *affusion*, and is practised

both with cold and tepid water with good effects. When the lower part of the body is immersed in water, it is denominated *hip-bath* or *semi-cupium*, and when the feet only are bathed, the bath employed is called a *pediluvium*." Nobility of nomenclature is very satisfying; it covers a deal of nakedness. But might not the modern gynæcological nurse betray just a shade of surprise if directed to administer a *semi-cupium* to the patient?

The important subject of temperature is dealt with in a manner which is quite unexceptionable. The degrees Fahrenheit which represent hot, warm, tepid, cool and cold baths respectively, are set forth with a precision which recalls those porcelain bath-thermometers which recommend themselves to our use as bearing "Dr. Forbes' specifications." Nor does the highly important question of the relativity of temperature escape due notice. "Here it may be necessary to remark that the sensation of heat or cold which a person may feel on immersion in water, will depend on the degree of heat or cold to which his body has been previously exposed, so that a person much chilled will on entering a tepid bath feel the water warm, while another who has been heated by exercise will find it sensibly cold."

The debatable question of the absorptive and other functions of the skin seems to be one about which modern writers on balneology have agreed to say little; probably preferring to leave the settlement of so abstruse a matter to the physiologist in his laboratory. Nevertheless the author of the "Mothers' Medical Help" was not afraid of it, and his remarks in connection therewith are interesting and suggestive. After briefly describing the structure of the cuticle and cutis vera, he at once proceeds to adduce the evidence in favour of absorptive power, with a view of persuading those who have doubted its existence. "The increase of weight in the body after remaining for some time in a warm bath, the evident swelling of the inguinal glands after long-continued immersion of the feet in water; the effects of vermifuge and cathartic medicines applied externally; the effects of mercury by friction and of the medicated baths in a number of cases, incontestably prove that absorption is effected by the skin under different circumstances with more or less activity."

On the question of the relation of the absorptive power to

bathing we find the following:—"When *medicated baths* are employed it is generally supposed that the impregnating matter produces on the system effects similar to those which would follow its internal exhibition. That this is so in some instances cannot be denied, but in most cases the effect is very trifling." After conceding the possible efficacy of the sulphurous bath and the chalybeate bath, "especially if it contain any aluminous impregnation" (a curious brace of exceptions, surely), he continues: "But that alkaline or earthy salts should produce any remarkable effect when applied in solution in the way of bathing, is not to be expected, as these salts cannot, we conceive, thus be made to enter the absorbents of the skin; indeed that they are not absorbed is evident from the circumstance that even sea-water will allay thirst merely by wetting the surface of the body with it." On the effect of baths in allaying thirst he dwells in another place, in support of the opinion that a quantity of water is absorbed and enters through the skin during immersion. "In consequence of this opinion, after the operation of bronchotomy the patient is frequently put into a tepid bath of *milk, whey or broth*; and if we may credit the tables of mythology and the legends of superstition, even *human blood* has been used for this purpose." The fact that the body weight is increased after remaining for some time in a warm bath is probably new to some of us. If it is a fact, it certainly supports the likelihood of the absorption of water by the skin during immersion. Now if plain water is absorbed, it is difficult to believe, in the case of sea-water, for instance, that the salts held in solution should be rejected while the water itself is taken up. In these days, when it would seem necessary to digest foods and peptonise milk before offering them even to the stomach, it is perhaps unnecessary to examine seriously the *modus operandi* of the "broth bath" or to enquire why it was that this luxury was reserved for those who had been the subjects of bronchotomy. It would, however, be interesting to know the grounds for the assumption that crystalline matter in an aqueous solution fails to penetrate where the water itself finds admission. The relief of thirst by sponging the surface with sea-water has evidently no bearing upon this matter, for if the thirst were due to a high temperature,



it would be relieved by the application of a cooler fluid, of whatever nature. The whole subject is interesting and deserves more investigation than it appears to have received.

Of course there is now no manner of doubt that the skin is endowed with absorptive powers of a very high order, though it must be admitted that precise knowledge of the matter is as little forthcoming now as it was when this book was written. In a footnote later on we find that "some writers and practitioners are of opinion that the cutaneous vessels, particularly of those parts of the body which are exposed to the air, absorb oxygen from the atmosphere." Unfortunately, nothing is adduced in support of this view. It is known that the skin exhales carbonic acid, and it may be said incidentally that many authorities are of opinion that other gases with even more highly toxic properties pass into the atmosphere by this means. It is therefore far from incredible that the constituents of the air should be inhaled in this way, though we may find it more difficult to follow the writer when he declares that "this causes in some constitutions eruptions on the skin," or in his theory that the sulphur waters are useful in cutaneous affections because "the sulphurated hydrogen gas will most powerfully diminish this oxygen by uniting with it to form water."

Considering that these were the days of "bleeding" one is rather surprised to find the author dwelling, as he does, upon the importance of the skin as an excretory organ. This importance is now generally recognised by balneologists, though it is astonishing to find to how great an extent it is overlooked by practitioners who have not had the advantage of Spa experience. But the statement on this subject most calculated to arrest the attention of the modern reader is the following :—

"There exists between the skin, the stomach and bowels, a *sympathy*, or what is called in medical language a 'consent of parts,' that is, when one part (suppose the skin) is affected, the other (the stomach and bowels) sympathises, as it were, and takes on analogous action. There exists also between the skin and the liver, or in other words, between the *perspiration* and *biliary secretion*, one of the strongest sympathies in the human frame. This is a consideration of the *first practical importance*, not only in the

cure of cutaneous diseases, but of *bilious, dyspeptic*, and other complaints; for by directing our operations towards any one of the functions in question we can decisively influence the other." Although this theory of the "consent of parts" is almost the exact opposite of what we now believe to be the truth, it undoubtedly represents a shrewd attempt to generalise correct observations upon the effects of baths and other remedial measures.

On the whole, however, the impression received by a careful perusal of these pages is that the portion of our art which is concerned with the practice of bathing, as such, has not advanced very materially since this book was written. This is entirely to the credit of our fathers. Such knowledge as was then open to them they acquired with avidity and practised with understanding, and it may safely be said that the resources of all of us might be materially increased by sitting for a brief period at the feet of Sir Arthur Clarke and his contemporaries.

Massage is usually regarded as a comparatively recent method of treating disease, and though some of the uses to which it has been put of late are as novel as they are effectual, yet the process itself was recognised and advocated nearly eighty years ago.

"After reposing for some time (in a Turkish bath) a servant comes, presses you gently, turns you over, and when the limbs are become supple and flexible, he makes all the joints crack without any difficulty, he masses and seems to knead the flesh without making you feel the least pain." Then in a foot-note occurs the following:—"This process is termed shampooing, which is an expedient neither known nor understood in this country, but generally used in India and the Levant as a luxury, often resorted to as a remedy in very high estimation. The operation is performed by people regularly trained to the office, and to be agreeable must be done with art." After describing his own experiences and the sensations caused by the cracking of the joints, the author continues:—"The attendant now began to knead the limbs, grasping, pounding, and gently squeezing the flesh with the whole hands, like so much dough, from the extremities to the centre.

In this description it is not difficult to recognise the processes now dignified with the names *effleurage*, *pétrissage* and *tapotement*, and the use of the verb "to mass," unemphasised either by inverted commas or italics, is curious and interesting.

Many of us have wondered from time to time why it was that the liver, whose functions are as recondite as they are obscure, should be the viscus invariably selected by our patients as the cause of all their indispositions. A perusal of Sir Arthur Clarke's work suggests that this opinion as to the inherent malevolence of the liver is a creed inherited from our forefathers. It is at any rate quite obvious that, bleeding and bathing apart, all the most active measures were directed against some supposed derelictions of duty on the part of this organ. So much is this the case that it seems almost to have been regarded in the light of a physiological whipping-boy, the extremity of whose suffering was to have an effect in deterring the other viscera from meriting similar treatment—either this, or as the means of vicarious atonement for the sins of the whole organism. Of this two instances must suffice.

One patient, "C. K., Esq., from the country," was thus treated. "I took blood from him every third day and put him into a vapour bath the intermediate days for a month; when the symptoms of an inflammatory diathesis disappeared I put him through a course of blue pills with James' powders till his mouth was affected, after which, with a light nourishing diet, warm bathing and Cascarilla draughts with Epsom salts."

Of another, who does not appear to have been syphilitic, the author tells us, "In the course of six weeks I bled him sixteen times and put him in a vapour bath after each operation. I put him through a steady course of mercury, gave him strong purgatives of calomel, jalap and cathartic extract, gave him opium, digitalis, squills and cream of tartar occasionally [*presumably as a bonne bouche*] which I found of great comparative utility." The patient does not appear to have shared this view as to the "comparative utility" of these gentle measures, for a footnote laconically informs us that "he died shortly after his arrival at Plymouth."

For us, who live in the luxurious and decadent times of

chloroform and hypodermic medication, it is difficult to decide which has the greater claim on our admiration, the energy of the treatment or the heroism of the patient.

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### THE TREATMENT OF CARDIAC AFFECTIONS BY BATHS AND EXERCISES.<sup>1</sup>

BY J. G. DOUGLAS KERR, M.B.

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IN the time at my disposal it would be impossible to enter into an exhaustive description of the baths and exercises which together form what is known as the Nauheim treatment. I take it for granted that all present are conversant with its details, or would refer them to one of the many published works on the subject. My object is rather to start a discussion on the principles involved in this last development of balneology and, with the added weight of opinion of those gentlemen who have so kindly come here to join us to-night, to try to come to some sort of conclusion as to its legitimate range of usefulness in the treatment of diseased conditions.

As regards its employment here, I would point out that the Bath waters are in no way an essential part of the Nauheim treatment; there can be little doubt, however, that a natural thermal water is better for making up these baths than ordinary water heated to the required degree, while in addition there are the advantages of a thoroughly equipped bathing establishment and trained attendants.

The Bath season being a winter one, we can offer facilities for carrying out the treatment when Nauheim and most of the Continental spas are shut. The credit of the system is mainly due to the brothers, Drs. August and Theodor Schott, of

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<sup>1</sup> Paper read before the Branch Meeting of the British Medical Association, at Bath, on April 27, 1898.

Nauheim, near Frankfort, though Professor F. W. Beneke, in 1859, noted the good results of the Nauheim waters in heart cases. Dr. W. Bezly Thorne was the first to bring the matter prominently under the notice of the medical profession in England in 1891, and since that time it has received considerable attention. The system has gone through the usual course of new discoveries, it has been unduly extolled as almost a cure-all, and equally unfairly derided as utterly useless, and has now settled down to a medium place of usefulness as an adjunct to thermal treatment in a limited number of carefully selected cases.

The treatment is divided into two parts, baths and exercises, which may be employed separately, but are usually given in conjunction. The Nauheim water, which has a natural temperature of 92° to 95° Fah., contains from 2 to 3 per cent. of chloride of sodium, 2 to 3 parts per 1,000 of chloride of calcium, traces of iron, lithium, potassium, and other salts, and a large amount of carbonic acid held in solution. As the course of treatment progresses the strength of the baths is gradually increased, while the temperature is lowered from about 98° to 90° Fah. or even lower; the first few baths are given still, the remainder effervescing. The necessary carbonic acid gas can be generated in several ways. The most convenient and trustworthy mode is by powders and tablets prepared by Dr. Ernest Sandow, of Hamburg. Where these are not available bi-carbonate of soda and hydrochloric acid mixed in proper proportions in the bath will do. It is essential that both the strength and temperature of any given bath are accurately known and maintained throughout, so that any means of carbonising the bath which renders this impossible is useless. The object is to bring the carbonic acid in contact with the surface of the bather during the whole time of the immersion; the finer the disintegration of the gas the better, as every bubble which rises to the surface is lost for practical purposes.

The mode adopted for a time by the Baths Committee, of pumping water charged with carbonic acid into the bath, was essentially bad, and I am glad to know that it is now practically given up. It is impossible to carbonate water at a temperature higher than 60° Fah. To neutralise this cold stream a hot douche was kept running, the two together washing out the salts

from the bath. In practice it was also impossible so to mix the two currents that an even temperature could be maintained. On experimenting with this bath I have found as much as 8° Fah. of difference between two thermometers held at different levels at the same time.

There is a tendency in England to trust too much to the baths and to relegate the exercises to a subsidiary position or to dispense with them altogether, which seems unsound in principle. From the time that Dr. William Stoker, of Dublin, advocated physical exercise as a treatment of heart disease in 1854, and Oertel made his attempt at systematic exercise as a treatment in similar cases, a great deal of scientific experiment has been devoted to ascertaining the effect of muscular contraction upon the circulation.

At the instigation of the Scientific Grants Committee of the British Medical Association, Drs. Lauder Brunton and F. W. Tunnicliffe entered upon a series of experiments, which are fully reported in the *British Medical Journal* of October 16, 1897, and deal exhaustively with the whole subject. Summarising the work of those who had preceded them in this line of investigation, they point that Ludwig, Sadler, and Gaskell were the first exact investigators. *Gaskell* demonstrated the facts :—

(1) That more blood passes through a muscle during contraction than when at rest.

(2) That the flow is greatest just after contraction has ceased.

*Ludwig* proved that when contraction and shortening are resisted, more blood passes through a muscle than when contraction is unresisted and produces shortening.

*Masso* proved that a limb diminishes in volume during muscular contraction, and increases above its normal volume immediately after the cessation of the contraction.

*Marey's* experiments show that during considerable muscular exercise the blood pressure is raised, but falls below normal after the exertion is over.

This report of Dr. Lauder Brunton and Dr. Tunnicliffe places the exercises in a position which it is impossible to assail. Comparing the exercises to massage as a treatment they point out that the primary rise of blood pressure upon exertion is greater than

that caused by massage, but that the subsequent fall is both greater and of longer duration. In cases where the heart is very feeble, so that the primary rise of blood pressure caused by even gentle exercise may interfere with its action, massage is the mode of treatment best adapted for restoring the circulation. That when the heart is sufficiently strong to bear the increased resistance presented to it by the primary rise of pressure occurring during exercise, gentle exercise is preferable to massage, inasmuch as the subsequent diminution of resistance is greater in amount and of longer duration. There can be no doubt that these baths and exercises produce a very powerful effect upon the circulation and through it upon the system generally. Dr Schott's theory is that the baths, by their action on the sensory nerves, and the exercises by their action on the motor nerves, cause a reflex influence to pass through the central nervous system, and hence to the cardiac nerves and muscle, causing firmer contraction and slowing of its beat.

Another theory favoured by *Sir William Broadbent* is that the dilatation of the cutaneous blood vessels by the baths, and the filling of the muscles with blood by the exercises, causes a lowering of tension in the peripheral circulation, so that the heart has not such a great resistance to overcome; and that, blood being drawn from the general circulation, tends to empty the left ventricle, and allows it to contract more completely. Dr. Bezly Thorne has drawn attention to the mental effect of the treatment in these words:—"No one can have observed the subjects of cardiac inefficiency, especially those who are affected by either simple dilatation, or by that condition associated with valvular lesion and failure of compensation, without being struck with the nerve-tension and mental suffering which they endure.

"Intolerance of sound, irritability, difficulty of mental concentration, lessened power of work, depression (amounting, in some cases, to despondency), and night alarm, are of common occurrence. With the rehabilitation of the heart and vessels which these methods of physical treatment are so successful in inducing, all such nerve-suffering vanishes like a dream, and the spirits rise to a plane of hope and energy which is surprising alike to the patient and physician."

If it be granted that the treatment produces the results claimed for it, it only remains to arrive at a conclusion as to the cases in which it should be employed as an adjunct to the general thermal treatment in use at the various British Spas. It is with the object of eliciting such an expression of opinion from those present that I have read this paper, in which I am aware there is nothing original, or that has not been better said and written by many others. I have had an opportunity of testing its efficiency in a considerable number of cases sent here by various colleagues for treatment and can confidently report that the results have fully justified my expectations; at the same time I would point out that the patients have been very carefully selected and mostly limited to cases of chronic heart disease, characterised by a dilated condition of the organ, with a rapid, feeble pulse, which at times may be irregular or intermittent.

The best results have been obtained where these conditions were functional rather than structural in origin. In the book on heart disease published last year jointly by Sir William Broadbent and his son, there is a passage which so directly bears upon this subject, that I cannot do better in bringing this paper to a conclusion than to quote it verbatim :—

“This treatment has only lately been introduced in England, and many successful results and cures have been claimed from its employment. It cannot, of course, cure valvular disease, in the sense of causing the vegetations or deformities of the valves to disappear, but it may give relief and greatly modify the symptoms in suitable cases. It must not, however, be thought that this treatment is applicable to and infallible in all varieties and conditions of morbus cordis, or that it is to be a substitute for all other forms of treatment.”

“In cases of cardiac dilatation from loss of tone of the heart muscle after influenza or some depressing disease, it may be of great service and effect a cure where drugs and other treatment have failed; in many cases of functional and neurotic heart disease, which are very common and are difficult to deal with, it may also give satisfactory results. In valvular disease it is, of course, unnecessary, when compensation is established and no symptoms are present; when compensation has completely



broken down it is not advisable, as rest in bed and suitable treatment by other means will be more efficacious. In cases of mitral disease, more especially mitral stenosis, when compensation is just maintained with difficulty, and when the degree of stenosis is such that increased contractile power of the right ventricle induced by digitalis would be useless or harmful, it may be of great service. In aortic disease it is not advisable, owing to the risk of syncopal attacks, though when compensation is breaking down and mitral symptoms are present it may sometimes yield good results."

The best results will be obtained in cases of functional or imaginary heart disease in neurotic individuals.

"Too much importance is attached by advocates of the Schott treatment to the percussing out of the area of cardiac dulness, and to the diminution it is said to undergo after each bath, more especially when the so-called auscultatory method is employed. This method lends itself very much to the imagination, and is absolutely untrustworthy. A shifting inwards of the apex beat is of importance, but it is probable that the diminution of percussion dulness is due, not so much to fluctuations in the size of the heart, as to encroachment by lungs on the cardiac area due to deeper respirations taken while the patient is in the bath. It does not therefore follow that, because the area of cardiac dulness diminishes after a bath, the heart is previously dilated. Accurate delineation of the outline of the heart by percussion is in many cases impossible, and even in the mere percussing out of the area of superficial cardiac dulness there may be many sources of error, so that a diagnosis of cardiac dilatation should not be made from the evidence of percussion alone."

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## THE TREATMENT OF CARDIAC AFFECTIONS BY BATHS AND EXERCISES.<sup>1</sup>

BY PRESTON KING, M.D.

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I HAVE no intention to detain you by entering into a description of the Nauheim treatment. I simply wish to offer a few remarks upon the subject, which may perhaps be of use in aiding the discussion which I hope will follow upon the paper that has just been read.

Of late years we have heard a good deal about the Nauheim treatment, especially for certain forms of heart disease, and many of our health resorts have now baths fitted up for its application, Bath, of course, being among the number.

It seems to me, however, that this system of treatment has not received that calm and philosophic consideration which is due to a new therapeutic agent. I am therefore very glad of the opportunity of bringing the subject before you this evening, for I think there are some of us present who do not look with unmeasured approval upon this branch of hydro-therapeutics as it is recommended by some of its most enthusiastic advocates.

At the outset I almost feel that an apology is due to our brethren from Bristol. They may be inclined to grumble that, when they come to Bath we give them so much water; when I remind them, however, that here we some of us live on water, I am sure they will forgive us, for they will see how great our interest is in keeping the supply pure.

The subject of hydro-therapeutics has always appeared to me to be one which goes very badly in double harness, with scientific medicine. I am sure my Bristol friends will pardon me for saying so, but it is hard, apparently, to have much to do with water, and not to get the reason warped; to use it much and still keep the intellect clear. A writer who is advocating the benefit

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<sup>1</sup> Paper read before the Branch Meeting of the British Medical Association at Bath, on April 27, 1898.

of some particular Spa, or of some especial form of bath, too often wraps around his subject what I may call a cloak of mystery, he hints that the natural mineral constituents of the water are something quite other than could be artificially produced ; he speaks with almost bated breath of some unknown source of heat ; and suggests that in the natural mineral water vapour we have an agent at work which is quite distinct from the steam of an ordinary kettle.

It is in no spirit like this that I wish to approach the subject of the Nauheim treatment. I look upon it as one among the many means that we possess, which, when properly applied, may be of use in alleviating suffering ; but, at the same time, as one which too easily lends itself to the insidious suggestions and the unlawful practices of the charlatan and the quack.

If, as I have hinted, the Nauheim treatment is of use in certain cases, let the value of its merits be decided by the profession, so that we can discover to what cases it is applicable, and how far we are justified in using it without bringing upon ourselves the odium of quackery.

The Natural Nauheim Water contains certain saline constituents, and free carbonic acid gas. It is acknowledged, however, that there is no peculiar virtue attaching to the natural water, but that the benefits of treatment follow equally the use of baths artificially produced.

Among these benefits in the treatment of chronic heart disease are three, to which I shall draw your attention, viz., a decrease in the frequency of the pulse, an increased arterial tension, and a reduction in the size of an enlarged heart.

With regard to this last we see published charts showing the decrease in the area of cardiac dulness as a result of the treatment, and we are told of a case where ten minutes immersion in the water caused the apex beat to be brought half an inch nearer to the mesial line.

Now, without questioning the accuracy of the observation in this case, I would venture to suggest that this change was not due to any subtle virtue in the Nauheim water, but might equally have occurred, as Sir Wm. Broadbent says it does sometimes occur, as a result of the patient walking a few times round the

room. I am suggesting, in fact, that the change was *post hoc*, and not, as advocates of the treatment would claim, *propter hoc*.

But after all with regard to the worth of those charts as showing the decrease in the size of the heart as a result of treatment—which decrease of size, by the way, it does not by any means follow must be of benefit to the patient—I would remind you that it has been well said, I forget by whom, that the more hearts we examine, or the more often we examine some particular heart under different circumstances, the less inclined shall we be to dogmatise with regard to exact cardiac size.

Next, as to the decrease in the frequency of the pulse, and the rise of the arterial tension, these are said to result from the use of the Thermalsoölbäd, and sphygmographic tracings are taken frequently by nurses, and shown, as the outward and visible sign of the inward working of this wonderful water. Now here again I am not denying the phenomena ; I merely ask do they occur *qua* Thermalsoölbäd, or are they not rather the result of the warm bathing.

In reply to this question I would draw your attention to the fact that at the Mineral Water Hospital we have found these very same results to follow upon the use of the ordinary Bath thermal waters.

It is not claimed that the saline constituents of the Thermalsoölbäd or its gases are absorbed into the system, and, if we ask how this particular bath works those peculiar results with which it is credited, we are told it is either by reason of certain reflex effects upon the central nervous system, produced by the small globules of carbonic acid gas upon the nerve endings in the skin ; or from those sensitive nerve endings being immersed in the effervescing saline waters ; both of which answers appear to me to be about the same as if the apologists of the Nauheim treatment owned that they did not know how the cure was worked.

I do not want to do more than allude in passing to the resistive movements. In principle they present nothing especially new. It is many years now since it was recognised that in certain affections of the heart muscular exercise was beneficial.

In Schott's movements, however, we have a system by means of which the work done can be carefully graduated, and con-

trolled with much greater ease than is the case in other forms of muscular exertion. The various movements of this system can be applied day by day, with increasing force, until the patient at last is enabled to return to the more ordinary forms of gymnastic exercises.

Now, how does the case for the Nauheim treatment, and especially for the Thermalsoölbäd, stand ?

It is not fair to condemn it because certain of its advocates place it too highly as a therapeutic agent. The benefit of its use may be allowed without it necessarily following that it produces changes in the circulatory apparatus which both reason and experience tend to show are not peculiarly its own.

That the Nauheim treatment is of benefit in certain functional diseases of the heart I am willing to allow. I have tried it in such cases and I know its use. But even in those I think the Schott's resistive movements are the more important factor in the case. There is a stimulating and an exhilarating effect, however, produced by bathing in an effervescing saline water, which is not felt in an ordinary bath. In most heart cases, and of course especially in those of a functional nature, there is a large neurotic element and a special chance for the mind to act upon the body for the benefit of the patient. Possibly the effervescing bubbles of carbonic acid fulfil their beneficial destiny quite as much by appealing to the psychic centre of the brain as they do by the occult reflex action upon the medulla, that has been supposed.

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DISCUSSION ON THE NAUHEIM TREATMENT FOLLOWING READING OF PAPERS AT MEETING OF BRITISH MEDICAL ASSOCIATION AT BATH, APRIL 27TH, 1898.

Dr. LAUDER BRUNTON felt some years ago very doubtful as to the use of the Nauheim treatment, and thought he would best test it by sending out a patient there. An old fellow-student of his in the army in India came home, with a largely dilated heart, swollen ankles and a lot of albumen. He (Dr. Brunton) tried every remedy he could think of, and finally, in despair, as he was going on steadily from bad to worse, said, "you must go to Nauheim." He went out to Nauheim, and after an interval of three weeks he, the doctor, followed and saw his condition there. After he came back he examined his heart carefully, and the changes it had undergone were marvellous. It had contracted, not to its normal condition, but very much below what it had been before. When he went it was largely dilated and feeble. This had considerably diminished, and the swelling of the ankles had got greatly less, and his strength greatly increased. This improvement went on after he came back, and he improved so greatly that, this man who had been within three months of his grave, went back to India, remained there for three years doing his duty, and shortly before he came back he applied for the post of Chief Medical Officer to the north-west province, involving the care of fifty millions of men. Such was his condition of health! That test case made a great impression on him, and since then he has sent a number of cases to Nauheim, and most of them derived great advantage. The treatment was undoubtedly useful in cases of nervous heart disease without any organic change. It was also useful in cases where there were distinct feebleness of the cardiac wall. Another class of case found largely in practice was that of a woman of about 55, very well to do, and accustomed to live very well. She grows stout, takes very little exercise, and drives out in her carriage; she gets very short of breath and very feeble. In such a case the Nauheim

treatment was very useful. Then again, in ptomaines it was of use, and when the ventricular wall was beginning to give way, the Nauheim treatment came in. In the first stages of very severe heart disease Dr. Brunton considered you had to deal with the patient in the way that might be described as rest, aided by massage, and when the patient is better, then the treatment by massage, by exercise, and by the baths comes in very useful. He thought it was Dr. Bezley Thorne who at first suggested that the initial stage was to bend one finger against resistance, and by subsequent tests it had proved very useful. The simple bending of the finger against resistance brings into action the muscles of the forearm. The action of the muscular movement is to increase the tension and then decrease it; and this was done without causing the patient any distress. The first effect of the muscular treatment was to enable the patient to walk a little longer. The effect of the baths and the effect of the exercise at the same time was this, that in the bath, when it is above the temperature of the body, you cause dilation of the vessels, especially of the skin, and thereby lessen the action of the heart. The effect was increased when you add to the baths certain salines, and more especially when you add to them carbonic acid. But any one who has taken notice of these acids in any of the waters, it would be found when a person got into the bath he would see very shortly afterwards little bubbles accumulating on the skin. He would find a general breaking out all over the body, so that when you find along with carbonic acid that the water is exhilarating, and when the vessels of the skin dilate, then the beating of the heart is very distinctly diminished. I have no doubt there is a reflex action upon the skin; the *modus operandi* of reflex action is very hard to follow, but everyone knows that such a thing does exist. The speaker thought that in all probability the exercises were really more useful than the baths, but with baths their usefulness was increased. There was one point more, and that was the mental effect. One could get at home baths and exercises, but you did not get the mental effect upon a patient, and he had sent patients to Nauheim for the mental effect rather than for the physical condition. These people who were sent there are often people who disregard the action of their heart. They

had been accustomed to do certain things all their lives and continued to do them. They met with a man whose age was about 65, who had been accustomed to drive everybody ; then the heart began to fail, he got a little fatty degeneration, was short of breath, slight regurgitation took place, but such a man could not change his mode of living. When they go to Nauheim they meet with other patients who talk to them and tell them that they must not do this or that, and in that way they get into the way of doing those things, and continue to do them when they come back as well. It was an enormous advantage that those cases should be sent in numbers to a certain place where they are to be treated by baths, and massage, and regulated exercises, because after they come back they will continue the treatment. Nauheim was then eminently a place to which it was exceedingly advisable to send patients, and this, notwithstanding certain disadvantages, such as its being a foreign country and the inability of patients to appreciate the change thus provided. Some of them would rather go to a place at home, and so it was found the Nauheim treatment was being adopted in various places in this country. He was pleased to learn that an attempt had been made to establish the system in Bath, and was, he thought, likely to meet with great success in cardiac affections.

Dr. BEZLY THORNE followed, and thought that in regard to the methods employed, the difference between the person who went into a thermal bath at Nauheim or in Bath, and a man who went down on a January morning to the Serpentine and broke the ice in order to go into the water, is one of degree, not of kind. In both cases they had the surface of the body subjected to a cooler medium which promoted reaction. The question upon which everything turned was: what was the power in the nervous system and the cardio-vascular system of the individual to meet a certain emergency. If the individual had not the power which they call "reaction" then mischief was done. The man who has immersed himself for a few minutes in the Serpentine goes home with a sense of living energy. The person who is immersed in a bath at Nauheim or Bath, and responds to the necessary cutaneous excitation is the better for it. Therefore, there is no difference in principle and kind, but merely



a difference of degree. But there came in the whole secret of the application of those methods. In one case you expose the person to a difference of forty degrees, when they knew perfectly well that the average invalid would be killed by such a shock to the system, and therefore, when a patient was presented for treatment by those methods, the question which the physician had to ask himself was this—what is the measure of balneological strength and of contrast of temperature to which this patient may be exposed so as to produce a good rather than a bad effect. It might be two degrees, it might be three, or four, or five, but that was a question which could only be decided by the indications of each individual case. Sometimes he heard of medical men having tried the treatment in two, three or four cases and having been disappointed, throwing it up, but he knew from his own experience in many such cases failure ensued because the methods had not been adapted to the exact individual want.

With regard to the relative value of the baths and exercises, Dr. Kerr heard him say at a meeting of the Balneological Society in London, that for the first year he practised the Schott methods he gave no baths at all—he relied entirely upon the exercises; since then he had administered baths and exercises, according to circumstances, and he was still of opinion that of the two the baths were perhaps the more important method, but neither could be adopted to the exclusion of the other. He remembered three or four years ago seeing a lady who had been subject for three years to frequent recurring relapses of influenza. She had a weak heart, and was reduced to the condition of a chronic invalid. He tried exercises for ten consecutive days. They did not advance her in the slightest degree, but from the moment he gave her the baths (and it required considerable courage on his part to prescribe them), she began to improve, and at the end of four or five weeks she was able to go out, and ultimately recovered activity. On the other hand there were cases in which it would be impossible to immerse the patient in a bath. In the spring of 1896 he was called to see a man who could not walk more than 150 yards without being brought into a state of mortal angina pectoris with lividity of the

face. He went with one of his nurses to see his patient, who was standing in the middle of the room: He (Dr. Bezly Thorne) said, "Just give him this movement with feather-weight resistance." The man turned pale, and when he had repeated the movement with the other hand, he was about to fall when they caught him and laid him on a sofa until he recovered; then they began the finger movements, which apparently had a good effect upon him, and after keeping up those and other very gentle movements for three or four days then put him in a bath. There was the converse case of a man whom they would not have dared to have put into a bath, but who was prepared for the bath by a number of exercises. He was almost afraid to tell the sequel; before the patient had been under treatment three weeks he was walking four miles a day, and a year later his patron reported that on the previous Saturday he had made ninety-eight at the village cricket match, and that the next Sunday he took four services single-handed. He could not agree as to the exclusive applicability of this treatment to functional cases, but would fall back to the admirable teaching of Dr. Balfour in "The Senile Heart": that recurring and habitual deviations from normal action are attributable to structural change.

Another point was the applicability of those measures to severe cases. Either baths or exercises could be given in such a manner as to do the patient infinite mischief, while, on the other hand, if wisdom and discrimination were exercised, it would probably be possible to give the baths and exercises in such a manner as to do good. As an illustration, he mentioned a case which occurred in 1896. He was about to enter a house, when a medical man seized him and dragged him into his carriage. His friend described to him that since eight o'clock that morning he had been trying to keep a man alive. He was over 70, suffering from diabetes with mitral disease and failure of the heart's action; he had injected him with ether, strychnine and digitalis and could not get him to rally. He (Dr. Bezly Thorne) went to see the man, his pulse being so weak that he could not count it, he was panting and could scarcely speak. He retired after the examination, and

saw the patient's wife, to whom he explained his intention of giving him some of the Schott exercises. She protested, and would not allow it, saying that he had undergone them some days before, and had brought him to his present condition. Ultimately she consented, and he (Dr. Bezly Thorne), with the help of his friend, gave him four of the finger and hand movements. At the end of the time he said he felt better, and as if a weight had been removed from his chest. He (the Dr.) asked his friend to repeat these methods two or three times a day. After the eighth day he called on the patient again, and was more than surprised to find him taking his wife into dinner. Such instances as these accentuated what Dr. Morrison had said in his book on that subject—it was the question of “dosage”; you might give a person doses of baths or doses of exercises which may do him harm or throw him back. It was in that way that study and observation determined the applicability and diminished the restrictions which bound the application of those methods. He endorsed entirely what Dr. Lauder Brunton said as to the impossibility of repairing valvular defects, and also emphasised the point that the baths may be of use where the orificial ring is dilated.

Dr. Bezly Thorne referred to the value of the marking out of the areas of dulness, the changes of form alone creating great interest and conveying much instruction. He had read what Dr. Maguire had said as to defining by palpation the area of cardiac dulness. Although he had at first regarded the suggestion with incredulity, he had found himself, at the end of four days, putting it into practice with perfect success. Since then he had frequently put it to the test in the following manner: he would mark out the area of dulness by bimanual percussion; then, closing his eyes and placing the stethoscope to the chest, mark the change of note elicited by auscultatory percussion; and, lastly, percussing over the spinal column and listening over the præcordia, would check the other observations by the method advocated long ago by Guéneau de Mussy and others. In every instance each method had yielded identically the same result. He produced tracings of the areas transferred to diagrams for comparison. In cases of Graves' disease he could not

advise any one to hold out in the treatment the slightest promise of absolute cure, though the application of not less than four courses would be of great value. Dealing with a lady patient, he had given her exercises followed by baths. Before treatment her pulse was 134, in two minutes it was 112, and in three minutes 108, in four minutes 106, and in five minutes 80. Introducing more force it rose to 120. For ten years she had not been able to sleep with any comfort, now she was able to sleep the whole night. The other case quoted was that of a lady passing through the climacteric period. Four years ago, following a period of great anxiety and care, she became aware of the rapid action of the heart with excessive pulsation increasing with exertion and emotion. This lady had three courses of treatment with manifest relief. He attached some importance to this case, as it was a very important thing to bring these people to a condition of greater comfort, greater activity, and greater usefulness.

The CHAIRMAN having invited Dr. Myrtle (Harrogate) to express his views, that gentleman referred to the ever-increasing numbers of cases of heart disease. He did not think that the Nauheim system of treatment was required in purely functional cases, but it was certainly adapted for relief of organic disease of more or less severity. As regards the reduction in the size of the heart, he did not attach so much importance to it as to the general improvement of the patient, and to the fact that his life was made more comfortable from the heart's being relieved of excessive work. As regards movements, he started them several years ago. Having a very severe heart case, he made the patient walk a few steps; these were increased day by day, with the result that the patient who was not able to walk a yard at first, was by-and-by able to walk a mile, and to ascend steep inclines and diminutive hills with comfort and benefit. He had treated a number of cases on the Nauheim plan, and when carefully applied he was convinced it gave a certain amount of good. He invariably ordered the baths to be given at ninety-six to begin with, that the patient should enter the bath very quietly and should not remain there more than ten minutes. He should then recline upon a couch for about a quarter of an hour, and

go home to rest for an hour. As regards cold baths he thought they could not be too careful in giving them to a patient suffering from heart disease ; in severe cases it might result in something like collapse. He had been treating what was called irritable heart. He had a patient who played polo most energetically ; when so played it was not an ordinary exercise. Here the first symptom of irritable heart was that when the patient laid on the left side he woke with a terrific headache. On listening to his heart, he found it beating most violently, but whilst this was the case his pulse was 58 and as weak as a child's. After a short course of the Nauheim treatment the heart's action became quieter, and the pulse stronger and stronger, and a few days before he left he asked him to sleep upon his left side, after having had nine Nauheim baths ; and then the patient told him he had woke up without a headache, his pulse was 72 instead of 58 and fuller. They could not measure the relative value of baths and exercises, but he was inclined to think that they came in with equal force in the case of cardiac disease. The treatment must be carried out systematically and with discretion. He had heard of injudicious treatment as regards baths, and patients reduced to a condition of great weakness because they were being bathed and watered to excess. Patients were sent to them for a good purpose, but in pushing those remedies to the fullest extent they were often doing infinite mischief. The finger movements, to which reference has been made by Dr. Bezly Thorne, seemed a marvellous remedial measure, and he would certainly practise it as being applicable to the worst possible cases of diseases of the heart. It would put the patient in the way of treating himself, would give him confidence, and was so simple that it could be carried out at the patient's own fireside.

The CHAIRMAN followed, but in the absence of experience could not take the same favourable view of the treatment as had been expressed. It should be remembered that all movements were resistive movements, and it was only a question of gradation. It seemed to him that the resistive movements might have their place at an intermediate stage, and be so graduated as to meet the needs of the patients.

Dr. KERR replied on the discussion. He was inclined to think that if some of them were unduly enthusiastic on the results of this treatment it was a fault in the right direction ; there were plenty of others to detract from the treatment.

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#### TREATMENT OF SYPHILIS BY SULPHUR WATERS.

Dr. SOLLY, of Harrogate, writes to us as follows :—"I am sure you will not wish the pages of the Journal taken up by any personal disputes arising out of opinions expressed at the meetings of the Balneological and Climatological Society, and I do not want to be the means of introducing them. The only reply which it seems necessary to make to the criticisms which Dr. Lieven, of Aix la Chapelle offers as regards my paper on the Treatment of Syphilis at Harrogate (read at the Society's meeting on December 10th), is to quote one sentence of that paper, which is as follows : 'my object to-night is not to prove that Harrogate is necessarily a better place than Aachen or other places for the treatment of syphilis, but rather to bring it before your notice that what is known as the Aachen treatment is and has been for some years efficiently carried out at Harrogate.' I may, perhaps, in addition, invite anyone who thinks it worth while to trouble further in the matter, to read my paper as it appears in the January number of the Journal (pp. 57-63). I shall be quite satisfied with the conclusion anyone arrives at after comparing my paper with Dr. Lieven's remarks."

## Editorials and Notes.

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### THE OPEN-AIR TREATMENT OF CONSUMPTION.

IT is very gratifying to find that the subject of the climatic treatment of tubercular disease in this country, which was discussed before the British Balneological and Climatological Society last year, has now been taken up by the profession in a way which is likely to lead to good results.

Several of our leading contemporaries have of late given special prominence to articles and reports dealing with the treatment of consumptive patients on climatic principles. *The Practitioner* of last month is devoted entirely to this subject, and we heartily congratulate the Editor on the uniform excellence of the various articles.

"The *Audax Japeti* genus," says the Editor of *The Practitioner*, "which in the present century has gained such victories over invisible foes that, like an enemy of another kind, go up and down upon the earth seeking whom they may devour, is beginning to think that even the dread tubercle bacillus may not be unconquerable. In most civilised countries there are signs that the Government and the people, as well as the medical profession, are awakening to the importance of the matter. Strangely enough, this country, which has hitherto been in the forefront of the battle against disease, and which has special reason to take an active part in fighting against tuberculosis, in the present instance has allowed other nations to take the lead."

"What is needed" he goes on to say, "is an organised movement for the provision of sanatoria for poor tuberculous patients, where they can be treated while their disease is yet in a curable stage, and where they can be isolated so as not to form a danger to those among whom they live. In France and Belgium leagues for the systematic combating of tuberculosis have been formed. The means employed are the study of everything relating to the scourge; the distribution to the public of leaflets and other

literature describing the modes of transmission of the disease, the means of preventing infection, the precautions which should be taken in dealing with consumptive patients, and the enlightenment of sanitary authorities to their duties in regard to the matter."

We have always contended that tuberculosis is a preventable disease, and that in its earlier stages it is curable if only proper hygienic measures be adopted to arrest its spread and to check its ravages when it has become lodged in the human system. Towards the achievement of the latter object nothing is so likely to conduce as the universal recognition of the superlative value of pure fresh air in the treatment of phthisis. The evidence of the success of such practice on the continent is overwhelming, and the proofs of like success in this country, although not so numerous as yet, are growing daily, and will soon become convincing if British climatic treatment be given a fair and extended trial in the treatment of this disease.

Preventative measures doubtless claim first attention, and a wide and thorough dissemination amongst the public of a knowledge of the disease, and the best means of dealing with consumptive patients so as to prevent the spread of the infection, would, we admit, do more good than all the therapeutic remedies, climatic or otherwise, are likely to do by curing the disease when it has become established.

Nevertheless, no such consideration as this should be allowed to cause us to relax our efforts in the slightest degree in devising the best means for arresting and curing the disease. Hence, not the least practical and useful outcome of the present movement should be the establishment of special sanatoria at suitable climatic resorts in Great Britain and Ireland for the treatment of poor tuberculous patients. That this will result we have little doubt if the value of suitable climatic treatment receive due and proper recognition in the first instance by the profession of this country.

#### MEDICAL ETHICS AT HEALTH RESORTS.

It comes to pass from time to time that practices and methods of procedure on the part of certain members of the



profession at some of our Health Resorts, are brought to our knowledge which, to say the least, cannot receive the approval of the majority of their brethren, and only too often lead to discord and even unseemly disputes. In such matters we have always felt it to be our duty, whilst expressing strong disapproval of what we believe to be wrong, at the same time to point out those better principles and methods which should guide and characterise the life and work of all our brethren.

It has been said that the peculiar conditions of Health Resorts' practice are favourable to the pursuit of methods which would be less successful in ordinary towns, but for which there is here ample scope only needing the men ready to adopt means for obtaining practice which cannot be used by their colleagues without incurring damage to honour and self-respect.

Many of the practices to which we refer would not exactly support a charge of unprofessional conduct, although they would, we are sure, be condemned by all right thinking men. This gives their brethren all the greater cause for bitter and just complaint seeing that they have no effectual remedy against such a state of things. What can the honourable practitioner do in such a case? Practically he is helpless and has to suffer the unjust and unfair competition of his unscrupulous rivals with hands tied and mouth closed. To imitate the evil methods would dishonour his professional conscience, and to raise his voice in an attempt to expose the offenders would probably involve him in litigation.

We have discussed this matter with numerous members of the profession who lament such a state of medical ethics at their own particular resorts, but who confess the inability we have indicated of dealing effectively with what has become a crying and growing scandal in that branch of medical practice which this Society represents. There appears to be only one remedy, and that is to discourage, by every possible and legitimate means, these obnoxious practices, and by precept and example to uphold more firmly than ever the standard of true and honourable professional life and work.

## DR. VIVIAN POORE'S ADDRESS.

The Society was very fortunate in securing such an able and well-known exponent of hygienic science as Dr. Vivian Poore to deliver the address at the Annual *Conversazione* on the 8th ult. The address fairly bristled with good points, and secured throughout its delivery the interested and sustained attention of the audience.

Particularly happy were the remarks of Dr. Poore on the subject of medical care and supervision of patients at health resorts. "When we advise a patient to leave the certainties of home for the uncertainties of a health resort," he said, "it is necessary, as a rule, to place the patient under medical care, and we none of us like to place a patient under the professional care of anyone concerning whose qualifications, character and abilities we know nothing. This to many practitioners is a real difficulty when advising their patients, especially to foreign resorts.

"It is notorious," he goes on to say, "that health resorts are the happy hunting grounds of irregular practitioners of every kind and description, so that it behoves us to be exceedingly circumspect as to the selection of a practitioner to whose care a patient is to be confided." In consequence of the increasing difficulties which certain foreign countries appeared inclined to place in the way of English invalids obtaining medical practitioners of their own nationality when abroad, it seemed, he thought, very likely that a stimulus would be given to our home and colonial resorts which would result in the improvement of those already existing and in the establishment of new ones in our colonies and dependencies. Dr. Poore pointed out that the facilities for modern travel place within the easy reach of British invalids our various colonial climates, where English doctors, and English comforts are at their disposal. This is a direction in which we shall look for remarkable developments in balneological and climatological practice in the near future, and such as this Society is probably destined to take an active part in.

## THE PHYSICAL TREATMENT OF CARDIAC AFFECTIONS.

Through the courtesy of the readers of the papers, and the Hon. Secretary of the Bristol Branch of the British Medical

Association, we are enabled to publish a report of a discussion upon the Nauheim treatment which took place at Bath on April 27 last. The discussion was opened by Dr. Douglas Kerr and Dr. Preston King, who contributed papers on the subject. Drs. Lauder Brunton, Bezly Thorne, Andrew Myrtle, and others spoke, and the result is a further contribution to our knowledge of a subject which has attracted not a little attention of the profession.

As at the recent discussion before the Balneological and Climatological Society, the balance of opinion was almost unanimously in favour of the usefulness of the treatment, but as on the former occasion, there were not wanting distinct expressions of opinion that the use of such methods may be carried too far, and indeed have so been in too many instances, and that there is need of greater caution and moderation on the part of those who advocate and use the treatment. We cannot but express a fervent hope now that the subject has been so thoroughly and impartially discussed by so many men, whose special experience in London and at the various health resorts entitles their opinions to consideration, that the system will settle down into its proper place as a recognised and valuable process in therapeutics.

#### SHALL VISITORS TO ENGLISH SPAS BE TAXED ?

Several years ago a resident of Bath described a personal visit to Carlsbad, where, soon after arrival, he was waited upon by an official who demanded the visitor's tax, amounting to about 10s., which having paid he proceeded to investigate the manner in which it was applied, and to try and discover whether any special advantage was to be derived from the impost. The number of visitors he found to be about 30,000 annually. The place is described as an isolated Bohemian village, beautiful by nature, but with no source of wealth except its hot springs. Yet by means of this tax it has been converted into a paradise, abounding in lovely public gardens, miles of walks through pine forests, splendid lakes and covered promenades, sumptuous eating-houses, admirable reading-rooms, a large and celebrated orchestra, &c. Moreover, these attractions are free to the visitor

after payment of the tax, the revenue being sufficient to maintain, in addition to these advantages, an excellent hospital.

Carlsbad is not the only place where this custom prevails. We may refer to Cleve, on the Rhine, where, upon the payment of 5 marks per each visitor—and less for a family—the same result is obtained. At Baden Baden a "Kur Tax," as it is termed, is imposed with the same object. There it is 1 mark per day, while for ten days 6 marks is the charge; for the same term 10 marks is charged for two persons, and 12 marks for three. At Ems, which has only about 18,000 visitors, after a week's residence 15 marks is the charge for each family, individual visitors being subject to 6 marks each for the same time. At Heligoland the "Kur Tax" amounts to 4 marks per week on families of not more than three, and 9 marks per week for families of more than three. At Homburg a municipal tax of 12 marks for each person is levied, but families are charged less, and visitors leaving before the sixth day are exempt. Reichenhall makes a standard charge of 15 marks upon each visitor for the season; while at Schwalbach the visitor has to pay a "Kur Tax" of 10 marks for the season. Carlsbad and Franzenbad both levy a similar tax of 15 francs for first-class and 9 francs for second-class, but this tax is only incurred by visitors who stay longer than eight nights; shorter visits are exempt. It will thus be seen that visitors under such conditions are absolved from many of those irritating charges which, from their multiplicity, are often perplexing even to the wealthy, and more so to those of limited means.

We often hear it said that many English visitors prefer the continental spas, because they present greater attractions than those at home. This may be true in some degree. If it is true it must be in the sense of artificial attractions, and not in that of natural advantages. It is admitted that the British health resorts possess natural attractions in the way of climate, scenery, and mineral waters, equal to those on the continent. It is not, however, equally certain that our Home Resorts can compete with the continental in the matter of artificial attractions; on the contrary, we are obliged to admit that, in many cases, the latter are far ahead of us in this respect. They have, as a rule, larger

and finer bathing establishments and *Trink-Halles*, larger and better bands, more extensive gardens, grander *Kursaals*, and a more continuous round of amusements, all provided at a minimum of cost to the visitor.

This being so, how comes it that foreign resorts, many of them admittedly far behind our English spas in resources of wealth, can build up and sustain such extra attractions? Doubtless it is due in great measure to this "Kur Tax" levied upon their visitors. Now we are not at the present time advocating the adoption of such a system by our home health resorts; but knowing the difficulties with which many of these places have to contend, and the heavy municipal and other burdens which they have to bear in order to make them attractive, we think it is a fair and legitimate question for discussion, whether such a tax would not enable the English spas to bear their burdens more easily, increase their artificial attractions, and at the same time, by a wider and more equal distribution of the burdens, please their visitors none the less.

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## BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY.

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AN ordinary meeting of the Society was held at 20, Hanover Square, London, W., on Wednesday evening, April 27th, Dr. W. VICARY SNOW (President) in the chair.

Dr. SUNDERLAND (Hon. Sec.) having read the minutes of the last meeting, which were approved, the names of the following gentlemen were submitted as Candidates for Fellowship, and were duly elected :

James Cantlie, M.A., M.B., F.R.C.S., London.  
 Roger Jackson Hutchinson, M.R.C.S., L.R.C.P., Haslemere.  
 Geo. A. Leon, M.A., M.D., Sidmouth.  
 Alexander Morison, M.D., F.R.C.P., London.  
 Ernest Kingscote, M.B., C.M., London.  
 Leslie Thorne Thorne, M.D., B.S., London.  
 Harry Campbell, M.D., M.R.C.P., London.

A paper, which is published on page 201, was then read on

### THE ACTION OF CERTAIN DRUGS AND MINERAL WATERS ON THE SECRETION AND COMPOSITION OF HUMAN BILE—AN EXPERIMENTAL INVESTIGATION.

BY WILLIAM BAIN, M.D.DURHAM, M.R.C.P.LOND. (HARROGATE).

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Dr. LUFF said that with regard to the differences of opinion referred to by Dr. Bain as to whether sodium salicylate is a cholagogue and also as to whether it increases the elimination of uric acid, he considered that it probably was to a certain extent a cholagogue, and that he had no doubt from the results of the experiments made by several observers and by himself that it increased the elimination of uric acid. He considered, however, that it was important to know in what way this increased elimination was brought about, as, in his opinion, the employment of sodium salicylate in gout as an eliminator of uric acid was open to very grave objection. He held the view, which he had brought for-

ward in the Gulstonian Lectures last year, that uric acid was ordinarily manufactured in the kidneys, and that in gout its presence in the general circulation was due to absorption of it from the kidneys, owing to deficient elimination of it by those organs. In the kidneys he believed that the uric acid was formed by the conjugation of urea and glycocine and that any drug that caused more glycocine to be conveyed to the kidneys would increase the formation of uric acid in these organs, and would therefore increase its elimination, provided the excretory functions of the kidneys remained sound. It was well known that sodium salicylate possessed the power of readily uniting with glycocine to form sodium salicylurate, and so would convey an increased amount of glycocine to the kidneys, where, by the combination of that body with urea, an increased amount of uric acid is necessarily formed. As he believed that in gout the absorption of the uric acid into the general circulation occurred only from the kidneys, owing to incapacity on the part of those organs to eliminate the normal amount of uric acid, he considered that the employment of sodium salicylate was open to grave objection in gout, as increased production of uric acid in gouty subjects would lead to increased absorption of it from the kidneys into the general circulation, and consequently to intensification of the gouty condition.

Dr. SOLLY (Harrogate) after expressing his interest in the communication made by Dr. Bain, pointed out that Dr. Bain's experience as to the relative value as a hepatic stimulant of the strong sulphur water from the "Old Sulphur Well" and from the "Montpellier" pump room was in general agreement with the teaching of clinical experience, which has always assigned a much greater value to the "Strong Sulphur" of the "Old Sulphur Well." With regard to the other waters experimented with, it was remarkable that many waters with a widely differing composition (as judged by the results of ordinary chemical analysis) had approximately the same effect, and other waters not differing from each other chemically to any remarkable extent had apparently very various physiological actions.

It had been stated by those who have had much experience in the Nauheim treatment that certain particular salts, though

only present in small proportions in a water as compared with its total salinity, yet seemed to be responsible for a great deal of the physiological effects of the water, more at any rate than would be expected from them in a hasty examination of a table showing the chemical analysis of the water. It seemed very probable that the same remark might be made as regards the relative value of the various constituents of the waters Dr. Bain had tried; some of the salts present in such small quantities as to be almost neglected on a cursory glance at the analytical table, might really be the chief cause of the efficiencies of the waters, the more bulky salines being only the adjuvants.

Dr. Solly concluded by saying that the profession owes a debt of gratitude to all who had the time and ability to carry out accurate physiological research into the action of mineral waters. There were plenty who could collect *clinical evidence*, but the physiological work was needed in addition to put mineral-water-treatment on a more scientific basis.

Dr. BAIN, in reply, referred to the valuable experiments of Dr. Luff in relation to the effect of salicylate of soda upon the elimination of uric acid. Dr. Bain desired to thank Dr. Solly for the appreciative way in which he alluded to the experimental research the speaker had conducted. The point raised by Dr. Solly, that waters almost chemically identical should vary in their physiological action, is particularly interesting and not easily explained. For the purpose of condensing the paper many points were not mentioned, such as the dosages of the drugs used, but every particular will be found detailed in the tables and chart attached to the complete report.

A paper, which is published on page 218, was then read on

### GOUT AND RHEUMATISM IN RELATION TO THE SEASHORE AND SALT BATHS.

BY EDMUND HOBHOUSE, M.D., M.R.C.P.LOND. (BRIGHTON).

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Dr. ARCHIBALD GARROD considered that the wide differences not only in climate and exposure, but also in soil and vegetation, which are presented by the various seaside resorts upon our coasts render it very difficult to arrive at any very definite con-



clusions as to the influence of sea air upon the diseases under discussion. His views were in agreement with those of the reader of the paper, and he thought that in recommending a place of sojourn for patients suffering from rheumatism, gout or rheumatoid arthritis it was safer, as a rule, to choose an inland rather than a seaside locality. Patients with rheumatoid arthritis frequently state that they suffer from an increase of pain by the sea; on the other hand he was not aware that the coast towns supplied any undue proportion of the sufferers from these diseases, or that a seaside residence predisposed to their development. Salt baths were certainly useful in some of the conditions discussed in the paper, but these could be obtained in a more concentrated form at inland resorts.

Dr. LUFF stated that his experience was that cases of acute and sub-acute gout did not as a rule do well at seaside places. This he considered was probably due to the high relative humidity of the air.

Mr. H. CUMMING (Torquay) said the sea shore having in common purity and constant renewal of fresh air, greater moisture and greater equability of temperature yet differed so widely in aspect, elevation, degree of shelter, and character of subsoil, that only comparison of the different places could determine its effect on certain diseases. At Torquay he thought that gout was uninfluenced for better or worse. There was plenty of it. One old patient, who suffered a martyrdom, told him he was as bad everywhere else—another that this, his first winter here, was the first he remembered to have passed without an acute attack. Acute articular rheumatism was certainly uncommon in the higher part of the town. He did not think that chronic rheumatism in its many phases was more common than elsewhere. It varied with the condition of the season; with a prevalence of westerly wind it certainly increased. If rheumatic affections be regarded as of microbic origin, then the rapid percolation of moisture through the cracks of the limestone rock and shale on which the town is built, the shelter of the hills, and the bright strong sunshine would all tend to have some germicidal action. Hot sea water baths he certainly found of benefit especially when used with the extract of *fucus vesiculosus*.

Dr. TYSON (Folkestone) said there were two diseases which he thought were to be found more commonly at seaside resorts than elsewhere, namely chronic rheumatism and anæmia ; under the former he would include sciatica, lumbago, and flying pains in joints, and the latter condition is met for the most part in young, ill-nourished women. He should say that March and April, when the east winds are most keen and searching, are the months in which these two complaints are most seen. There was an interesting condition, he said, which for want of a better name he would call biliousness, which very commonly comes on in people after they have been at the sea for about a week ; the symptoms are loss of appetite, sickness, furred tongue, a general fatigue feeling, mental torpor, often followed by a sleepless state at night. The treatment best suited for it, he considered, was the old-fashioned blue pill and saline draught in the morning following. He believed that many of these attacks might be prevented were a course of the above treatment adopted a day or two after arriving at the sea ; the action after blue pill in causing a rapid return of sleep is often well marked. His own experience led him to think that as a rule neither gouty nor rheumatic arthritic patients were benefited by sea air treatment.

Dr. SYMES THOMPSON expressed the hope that by the patient and persevering collection of facts on the lines followed by the author and laid down by the Climatological Committee of the Royal Medical and Chirurgical Society, much useful information would be accumulated which would tend to make the treatment by climate far more precise and scientific than was at present possible. As regards rheumatic affections, he had found, when preparing his papers on "Devonshire" and the "Channel Islands" for the Royal Medical and Chirurgical Society referred to by the author, that medical men residing in sheltered, soft, and humid stations in the south and west, stated that rheumatic affections were unduly prevalent, whereas in the north and east of England, and in exposed places like Llandudno in the north-west of England, neuralgic disorders were especially prevalent and persistent.

Dr. HYDE (Buxton) said he thought that the meeting was

greatly indebted to Dr. Hobhouse for having presented to it such an interesting and suggestive paper. Personally, he had not had experience of seaside practice, therefore any views he might express must necessarily be one-sided, owing to his experience having been under opposite climatic conditions. A most interesting and important question, however, had been raised by the paper as to the relative influence of climate in general in treatment, especially of the diseases under review. It must have been the experience of most to notice how difficult and sometimes incomprehensible these influences were. This difference was remarkable even between one inland resort and another, but especially between inland and seaside places. He had been much interested in the statement of Dr. Hobhouse that the seaside climate was unsuitable for gouty patients with acute and sub-acute tendencies. This opinion accorded with the frequent testimony of gouty patients who had come under his observation at Buxton. Now how could this be explained? It was, he thought, Professor Beneke who established the fact that heat is lost more rapidly from the body at sea-levels than at inland and elevated climates. This at first sight was of course contrary to what we should expect, seeing that the temperature is higher at seaside than in elevated climates. It would seem that the processes of metabolism were more active at the seaside, and this was due to the greater humidity of the marine climate, which together with the higher temperature promoted the more active tissue-change. Might not therefore the explanation of the fact that so many cases of gout were aggravated at the seaside, be found in this direction. He thought it not unlikely. Possibly, the increased products of waste, including uric acid, due to increased tissue-change, were accumulated in excess of the powers of elimination, and set up those irritative processes about the joints and other parts of the body, which are peculiar to the gouty state. Anyhow, he could not but think the question worthy of deeper investigation, and he would again tender his personal thanks to Dr. Hobhouse for bringing that very important and suggestive subject before them that night.

Dr. SOLLY (Harrogate) remarked that while he could give no direct evidence as to the effects of a "seaside" climate upon

rheumatic cases, he believed the majority of practitioners at Harrogate would support him in saying that among the rheumatic patients who came there for treatment, those who came from the seaside were among the class who derived most benefit from a course of treatment there.

Dr. WARD-HUMPHREYS (Cheltenham) said they had heard many statements made that evening from speakers of equal experience, which statements were so diverse and to some extent so contradictory that it was not easy to decide how they could be reconciled. It had been said that acute rheumatism was common by the seaside, and one speaker had said that rheumatoid arthritis was very prevalent at Brighton and had attributed this to the proximity to the sea; Dr. Cumming, from Torquay, had stated that in that town acute rheumatism was very uncommon and that rheumatic fever was almost unknown. Was not the explanation to be found in the fact that whereas Brighton contained a very large urban population with a great number of comparatively poor, ill-nourished anæmic people, while Torquay was happy in being chiefly villadom and in comparatively speaking, having no poor. He was inclined to believe that this was the explanation for he thought that Dr. Hobhouse had in his most suggestive paper stated that his statistics were drawn from the out-patient room of a hospital, while the Torquay experience was that of a practitioner, whose work lay among the more prosperous of the community. He strongly felt that anæmia and the small crowded and damp dwellings inhabited by the poor in many seaside places were responsible for the rheumatism, and that it was not correct to saddle the responsibility upon the climate *per se*, or upon the amount of watery vapour in the air. He thought that it would be interesting to know how Paignton and Brixham, two towns on Torquay Bay and quite near Torquay, but inhabited by two quite different classes of the community fared relatively one to the other in the matter of rheumatic affections.

He was surprised to hear that the seafaring population suffered greatly from rheumatism. He had in his small experience gathered an opposite opinion.

He desired very emphatically to endorse what Dr. Luff and others had said as to the ill-effect of sea air on bilious people,

or those who were often popularly spoken of as being livery. In the town in which he lived—the name of which innate modesty forbade him to mention—it was his constant experience during the season that of the number of visitors who came there to seek relief from liver troubles and gout that they invariably stated if they had recently been to the seaside that they had been much worse while there, and he knew of a large number of patients who, if it became necessary for them to go to the sea were either immediately seized with “bilious attacks,” or had made calomel and blue pill an essential ingredient of their diet.

Whether or not such opinions as these, derogatory to the seaside places and flattering to the inland places were made from a desire to please or from a craving for sympathy he did not know, but he was very clear from a considerable experience that such people invariably did better when inland. If then the views as to the nature of gout propounded by Murchison and Latham were correct, that it was due to a functional derangement of the liver it was easy to understand why gouty patients found the seaside trying to their tempers and inflammatory to their tissues, he therefore fully agreed with the previous speakers who had spoken in the same sense, and while unable to agree with Dr. Hobhouse in all his conclusions he desired to thank him for his very interesting contribution.

Dr. BOWEN-DAVIES (Llandrindod Wells) said that his experience at the inland spa where he resided confirmed the opinion of Dr. Hobhouse and other speakers, that as a rule cases of gout did not do so well at seaside resorts.

Dr. HOBHOUSE, in reply, said that he wished to make it clear that it was impossible to make any reliable comparison between the sea-shore and other places as regards the prevalence of chronic rheumatic affections ; though stated to be prevalent by the sea, they might well be just as prevalent inland in many places ; mere impressions are useless in such matters and figures unattainable. In answer to Dr. Cumming he would say that his remarks only applied to gout in an active form ; hundreds of gouty patients lived by the sea-shore, and if careful they often did so in comfort ; but if they got acute attacks they did not easily get rid of them. Dr. Ward-Humphreys was correct in supposing that his statistics were entirely drawn from hospital patients. There would cer-

tainly be wide discrepancies between hospital experience and that of private practice ; considering all the fallacies involved, which had been well pointed out by Dr. Newsholme in the Gilroy Lectures, 1895, it was doubtful whether any of the results attained are of permanent value ; one thing Dr. Newsholme says is certain is that rheumatic fever is an urban, not a rural disease ; it would therefore be made more prominent in statistics from hospital practice, which are of necessity urban. He would like to express his agreement with Dr. Tyson as to the prevalence of anæmia ; it was apparently just as common as in London, chiefly amongst the same classes, viz., shop girls and domestic servants. Cases, however, which came to the sea anæmic, recovered quickly if placed under proper conditions.

Dr. A. F. STREET (Westgate-on-Sea) who was unavoidably prevented being present at the discussion, wrote to say that he had found decided benefit accrue from sea water (and more especially from seaweed) baths, in the amelioration of some forms of chronic rheumatism and rheumatoid arthritis. He also stated that he did not remember to have found such baths of any particular value in cases of chronic gout.

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## BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY.

### SECOND GENERAL MEETING OF THE SESSION.

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A GENERAL Meeting was held at 20, Hanover Square, on Wednesday, June 8, 1898.

The President, WM. VICARY SNOW, M.D., M.R.C.P., in the chair.

The minutes of the last general meeting, held in October, 1897, were read and confirmed.

The ballot was opened for the election of officers and Council for the ensuing session, and Dr. Hamilton Cumming (Torquay) and Dr. Pagan Lowe (Bath) were appointed scrutineers.

The Chairman of Council, Dr. HYDE, presented and read the report on the state and prospects of the Society as follows:—

“The Council begs to submit the following report of the work of the Society during the past Session, 1897-98.

“Fifty-three new Fellows have been elected during the Session, and there have been ten resignations and one death; the total membership at this date being 382.

“The death of Mr. W. H. Freeman, of Bath, is felt as a loss not only to this Society but to that special branch of medical practice of which he was a distinguished and well-known member.

“The arrangements for holding the meetings of the Society at the rooms of the Royal Medical and Chirurgical Society, 20, Hanover Square, have proved very satisfactory. There have been five ordinary meetings of the Society during the Session, and these have been well attended. The papers read at the meetings were interesting and the discussions well sustained.

“The Annual *Conversazione*, which it has been usual to hold at an earlier date, is to be held this evening, and an address will be delivered by Dr. Vivian Poore.

"The Journal of the Society, which is now in its second year of issue, has been much appreciated, and has contributed materially towards the stability and prosperity of the Society.

"The financial position of the Society continues satisfactory.

"Dr. W. Vicary Snow, following Dr. Andrew Myrtle as President, has succeeded in sustaining the dignity of the chair by the courteous, tactful, and punctual discharge of his duties.

"The Society has suffered a loss in the resignation of Dr. Aylmer Macfarlane, one of the Hon. Secretaries, who rendered valuable assistance during the foundation and early days of the Society.

"The Council is pleased to report that through the generosity of the Hon. President, Sir Edward H. Sieveking, a Library has been started, which it is hoped will speedily grow into a comprehensive and unique collection of works bearing upon balneology, climatology, and allied subjects. Dr. Morgan Dockrell has been appointed Hon. Librarian, and, pending the acquirement of permanent rooms by the Society, he has kindly consented to house the books at his address, 9, Cavendish Square, where they will be accessible to Fellows during stated hours.

"In submitting the foregoing report to the Fellows, the Council desires to record its sense of the appreciation by which its efforts to advance the cause of British balneology and climatology have been received by the Fellows and by the profession generally. It would urge upon the Fellows the great scope for extended usefulness which lies before the Society if the spirit of good fellowship and high professional ideals be maintained which have hitherto characterised its work."

It was resolved unanimously that the report of the Council be received and adopted.

Dr. Ward Humphreys and Dr. Leonard Williams were appointed Auditors of the accounts and balance sheet to be presented at the October General Meeting, 1898.

The following resolution was proposed by Dr. MORGAN DOCKRELL, seconded by the PRESIDENT, and carried unanimously :

"That this meeting desires to accord a hearty vote of thanks



to Sir Edward H. Sieveking for the handsome gift of books which he has presented to the Society."

The PRESIDENT announced that the scrutineers reported the following Officers and Council to have been unanimously elected :—

*President.*

R. Fortescue Fox, M.D., M.R.C.P., Strathpeffer Spa.

*Vice-Presidents.*

Frederick Bagshawe, M.D., F.R.C.P., St. Leonards-on-Sea.

R. O. Gifford Bennett, M.D., J.P., Buxton.

Robert Cuffe, M.R.C.S., L.S.A., Woodhall Spa.

W. Bowen Davies, M.R.C.S., L.R.C.P., J.P., Llandrindod Wells.

J. Ivor Murray, M.D., F.R.S.Ed., J.P., Scarborough.

Charles Parsons, M.D., Dover.

Samuel Hyde, M.D., Buxton.

Henry Lewis, M.D., Folkestone.

Andrew S. Myrtle, M.D., J.P., Harrogate.

J. G. Douglas Kerr, M.B., Bath.

George Oliver, M.D., F.R.C.P., Harrogate.

Wm. Vicary Snow, M.D., M.R.C.P., Bournemouth.

*Council.*

Walter C. Blaker, M.R.C.S., L.S.A., Bognor.

Morgan Dockrell, M.A., M.D., London.

R. Eardley-Wilmot, M.B., Leamington.

W. Black Jones, M.D., D.P.H., Llangammarch Wells.

H. Laing-Gordon, M.D., Forest Hill, S.E.

John Inglis, M.A., M.D., Hastings.

C. G. Havell, M.D., Felixstowe.

William Haldane, M.D., Bridge-of-Allan.

Edmund Hobhouse, M.D., M.R.C.P., Brighton.

John Hackney, M.D., Hythe.

Joseph C. Harsant, M.D., Bournemouth.

Alfred Haviland, M.R.C.S., Douglas.

Wm. Maccall, M.D., Southport.

J. Perrott Prince, M.D., M.R.C.S., Natal.

Thomas Macqueen, M.B., C.M., Eastbourne.

Henry McClure, M.D., Cromer.

Patrick Letters, M.D., Valencia.

Abraham Thomas, M.B., Aberystwith.

Wm. Moxon, M.D., L.R.C.P., Matlock.

A. W. Orwin, M.D., London.

Reginald Pollard, M.B., Torquay.

Ernest Solly, M.B., F.R.C.S., Harrogate.

Alfred F. Street, M.A., M.D., Westgate.

C. H. Tamplin, M.R.C.S., Ramsgate.

Alexander Thom, M.A., M.D., Crieff.

C. W. E. Toller, M.D., Ilfracombe.  
 Wm. J. Tyson, M.D., M.R.C.P., Folkestone.  
 Leonard Williams, M.B., London.  
 H. H. Ward-Humphreys, M.R.C.S., L.R.C.P., Cheltenham.  
 George S. Watson, M.R.C.S., Tunbridge Wells.

*Chairman of Council.*

Samuel Hyde, M.D., Buxton.

*Hon. Treasurer.*

C. R. B. Keetley, F.R.C.S., London.

*Hon. Librarian.*

Morgan Dockrell, M.A., M.D.

*Hon. Secretaries.*

Septimus Sunderland, M.D., London.  
 H. Shirley-Jones, M.R.C.S., Droitwich.

The following are also Vice-Presidents, but without a seat on the Council, unless specially elected :—

R. Eardley-Wilmot, M.B., Leamington.  
 D. Edgar Flinn, F.R.C.S., M.R.C.P., Kingstown.  
 Alfred Haviland, M.R.C.S., L.S.A., Douglas.  
 John Inglis, M.A., M.D., Hastings.  
 J. G. Sinclair Coghill, M.D., F.R.C.P., Ventnor.  
 W. Haldane, M.D., Bridge-of-Allan.  
 George S. Watson, M.R.C.S., Tunbridge Wells.  
 Thomas W. Thursfield, M.D., F.R.C.P., Leamington.

An ordinary meeting was held after the General Meeting. The minutes of the last ordinary meeting were read and approved. The following candidates were put up for ballot and duly elected :

F. W. Burton Fanning, M.D., M.R.C.P., 1, St. Faith's Lane, Norwich.  
 Arthur Pearson Luff, M.D., M.R.C.P., M.R.C.S., 31, Weymouth Street, London, W.  
 Septimus Tristram Pruen, M.D., M.R.C.S., Sherborne Lodge, Cheltenham.  
 Cyril John Williams, L.R.C.P., L.R.C.S., L.M., "Brookside," Woodhall Spa.  
 Robt. William Felkin, M.D., L.R.C.P. & S., 23, Henrietta Street, London, W.  
 Edmund King Houchin, L.R.C.P., L.M., L.R.C.S., Durham House, Stepney, E.  
 Thos. Stretch Dowse, M.D., F.R.C.P., M.R.C.S., 14, Welbeck Street, London, W.  
 Alex. William Gilchrist, M.D., M.R.C.S., L.R.C.P., Nice.

REPORT OF THE COMMITTEE ON THE PROPOSAL  
TO ESTABLISH CHAIRS OF MEDICAL BALNE-  
OLOGY, CLIMATOLOGY, AND GEOGRAPHY.

IN accordance with the Resolution of the Committee appointed by the Council of the British Balneological and Climatological Society to the effect that a Sub-Committee consisting of Drs. Theodore C. Williams, Haviland, Sunderland and Fortescue Fox be appointed and approved by the Council to draw up a *Memorandum* setting forth the necessity of teaching Medical Balneology, Climatology and Geography in the several Schools of Medicine in Great Britain, Ireland, and the Colonies, and inviting the co-operation of the different schools of medicine and examining boards—

The report of the Committee having been presented to the Council and approved, it was resolved that the Sub-Committee be requested to draw up a *Memorandum* in accordance with the foregoing report and submit it to the Council at their next meeting for approval.

In accordance with the above resolution the Sub-Committee now submit the following to the Council of the British Balneological and Climatological Society.

MEMORANDUM :—

(1) The British Balneological and Climatological Society was established for the purpose of cultivating certain branches of science intimately connected with preventive and curative medicine, such as medical balneology, medical climatology, and medical geography, with the view of promoting a sounder and wider knowledge of these subjects among members of the medical profession than now obtains, and as a practical step towards this object, the said Society opened a discussion as to the best means of carrying it out, on October 27, 1897, Dr. William V. Snow, President, in the Chair.

(2) At this meeting the following resolution was proposed by Mr. Alfred Haviland, seconded by Dr. C. Theodore Williams, and carried unanimously to the effect "That it is expedient in the

interest of the public health and for the advancement of medical science, that the ancient and important branches of medicine, *medical balneology*, *medical climatology*, and *medical geography* should be recognised by the medical examining boards throughout Great Britain, Ireland, and the Colonies as essential parts of a student's medical education at the several Schools of Medicine within the British Empire."

#### SYLLABUS.

##### (a) BALNEOLOGY.

(1) The general principles of hydrotherapeutics.

(2) The different classes of "mineral waters": alkaline, muriated saline, sulphureous, chalybeate and indifferent thermal. Their chemical characters and medicinal properties.

The place of thermal agencies in the treatment of chronic disease. The effects of baths at different temperatures on the organs of circulation, the nervous system, nutrition and bodily heat.

(4) The different forms of medicated baths, natural and artificial, their general properties and application.

##### (b) CLIMATOLOGY.

(1) The elements of meteorology—atmospheric pressure—temperature—moisture—winds—atmospheric electricity, and the various instruments and methods for their accurate determination.

(2) The factors of climate—latitude, altitude, distribution of land and water, ocean currents, mountain ranges—soil and vegetation, rainfall and its causes.

(3) Relation of climate to man—influence on man—of extreme heat—of extreme cold—of excessive moisture—of excessive dryness—of diminished atmospheric pressure—of increased atmospheric pressure. Climate as a cause of disease—climate as a cause of immunity. The various climates of the world, and their influence on health and disease.

(c) MEDICAL GEOGRAPHY—ELEMENTS.

(1) *Statistics*. (2) The *geographical position* of the land, and its *physical* and *geological* structure. (3) *Relation of diseases* and *local climatic factors*.

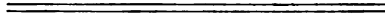
(1) *Statistics* :—Census returns of the number of males and females living at certain age-periods within certain limits of time and area. Returns of the registration of deaths among males and females separately from all causes, and certain specified causes of death at certain age-periods among the said populations within the same limits of time and area. Returns from trustworthy sources of the existence or absence of certain diseases, not necessarily fatal, within certain limits of time and area ; such as endemics and epidemics, and the social, climatic, and parasitical factors associated with them.

(2) *The Geographical Position of the Land and its Physical and Geological Structure* :—The relief of the country under discussion, as determined by the configuration of its physical features, and its geological structure, their influence in the production of *local climates* (as distinguished from *general climates*, due to latitudinal, insular, peninsular, and Continental position). The factors of such local climates consisting of *aspect* as regards the solar rays and prevailing winds; direction of the valley-systems, as regards the facilities or obstructions offered by them to ventilation by the winds ; the rainfall as influenced by physical features or geographical position ; the water courses (rivers) whether subject to floods, summer or winter, and their relation to pervious or impervious geological formations.

(3) *The Relation of Diseases to Local Climatic Factors* :—The graphical arrangement of statistical, physico-geographical, geological, and climatological facts so as to show the coincidence of the prevalence or scarcity of certain diseases with certain ascertained local climatic factors— and repeating this process throughout series of years, and extensive areas such as Great Britain, Ireland, and when practicable our colonies and foreign countries, so as to remove the associated phenomena from the category of mere coincidences and raise them in scientific value as guides to the discovery of where their real causes will

ultimately be found, although in many cases hidden from us at present.

By such investigations and the graphical portrayal of disease distribution as their outcome, it is intended to aid the medical man in his clinical practice, in the selection of localities for the residence of his patients, and in his study of the natural history of disease.



## Reviews and Notices of Books.

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**A SYSTEM OF MEDICINE.** By many writers. Edited by Thomas Clifford Allbutt, M.D. Vol. V. London: Macmillan & Co., Ltd. New York: The Macmillan Co., 1898. Price 25s. net.

It again gives us pleasure to notice a further instalment (the 5th volume) of this really valuable work. The superior character of the various articles in the preceding volumes is equally well borne by those of the one before us. The subjects comprising the present volume are, Diseases of the Respiratory Organs, Diseases of the Pleura, and Diseases of the Circulatory System. The editor is again to be congratulated upon his selection of writers, who have obtained wide reputation as authorities upon those special branches of medicine allotted to their respective pens.

The important subject of Pneumonia has fallen into the capable hands of Dr. Pye Smith, who devotes to it sixty-five pages of interesting and instructive matter. We would particularly commend to our readers a careful study of the appendix of cases with which Dr. Pye Smith has enriched his article.

In Dr. William Ewart's article on Bronchitis we have a good example of that author's careful and painstaking labour in the discussion and elucidation of any subject which he may undertake. In the matter of treatment Dr. Ewart does not omit the important consideration of climatic measures of relief, nor forget the less recognised value of certain mineral springs in chronic bronchial troubles. He says "In all cases of inveterate catarrh, but particularly in those which from their severity deserve the name of bronchorrhoea, a warm and equable climate during the winter is indispensable. Various sheltered stations have been recommended in this country, such as the Undercliffe, Torquay, Falmouth, Ilfracombe, Minehead, the Scilly Isles, and others. Some patients will derive great benefit from a winter's residence in the bracing atmosphere of Thanet. Nevertheless, whenever this is possible, the Mediterranean seaside resorts are to be preferred; and among them the more sheltered, such as Mentone, San Remo, Alassio, Rapallo, the Riviera di Levante, Capri, Malaga, Corfu, Egypt, and suitable resorts on the North African coast. This large subject is fully treated in the article on "Climate in the Treatment of Disease" in the first volume.

"Unless the membrane be protected from irritation for prolonged periods no lasting improvement in the condition can be looked for. Permanent residence for some years in a favourable district is the only really curative treatment; but this may with benefit be combined

with a summer visit to one of the hot sulphur springs; or to Ems, Soden, or any of the saline muriated and carbonated springs, suitable for the individual case. The opportunities for permanent residence in eligible climates are widening year by year."

Dr. Percy Kidd's article on Phthisis is a comprehensive and exhaustive survey of our present knowledge of this disease. Dr. Kidd discusses the theory of inherited tuberculosis advanced by Baumgarten, but expresses it as his opinion that intrauterine infection is quite subordinate in importance to extrauterine invasion.

Dr. Goodhart contributes an excellent article on Asthma and Hay Fever, whilst Dr. Samuel West discusses the subject of Intra-pleural tension in his usually lucid style.

Chlorosis is discussed by Professor Clifford Allbutt in a singularly able and interesting article, in which he endorses the theory of Lloyd Jones that the blood in chlorosis is an exaggeration of a condition most favourable to fertility, the plasma of such blood being rich in albuminous bodies, such as support foetal nutrition during pregnancy.

The contribution of Dr. T. Oliver will be very useful to all who are interested in the effects of electric currents of high pressure.

Acute and chronic Endocarditis are discussed by Dr. Dreschfeld, and Diseases of the Myocardium by Sir R. Douglas Powell, in articles of much ability.

Mitral Disease is discussed by Dr. A. Ernest Sansom in a clear and scientific manner, and the different forms of treatment, including the Nauheim system, receive fair and proper notice.

Other names deserving of mention are Drs. Arlidge, Rolleston, Kingston Fowler, D. W. Finley, Herringham, Gee, S. Coupland, Stephen Mackenzie, Wickham, Legg, Cheadle, John Thompson, W. Johnson, Copeman, Muir, Dickenson, Michael Foster, F. T. Roberts, and L. Humphrey, all of whom contribute in more or less measure to the undoubted success of the present volume.

#### DICTIONARY OF BATHING PLACES AND CLIMATIC HEALTH RESORTS.

By B. Bardshaw. London: Kegan Paul, Trench, Trubner & Co., Ltd. Leipzig: F. A. Brockhaus. Paris: The Galignani Library. Nice: The Galignani Library. New York: New Amsterdam Book Co. 1898. Price 2s. 6d.

Bradshaw's Dictionary of Bathing Places, Climatic Health Resorts, &c., has long held a unique and important position amongst this class of literature, and it affords us special pleasure to observe that the present volume not merely maintains, but if anything, excels the peculiar excellence of former editions. One welcome improvement is the thorough revision of the matter relating to some of the more important resorts in this country. This work appears to have been carefully and conscientiously done and will add very much to the value



of the book as a reliable directory and work of reference. We know of no work which contains so much valuable and reliable information upon the health resorts of the world in such a condensed and portable form, and as such we most strongly recommend it to our readers, to whom it should prove indispensable.

**THE TREATMENT OF SARCOMA AND CARCINOMA BY INJECTIONS OF MIXED TOXINS.** By C. Mansell Moullin, M.D., Oxon., F.R.C.S. London: John Bale, Sons & Danielsson, Ltd. 1898. Price 3s. 6d. net.

We are indebted to Dr. Mansell Moullin for the publication of this little work, which has grown out of a paper read before the Harveian Society of London some time ago.

The treatment of malignant growths has hitherto been very barren of success, and we cannot but welcome any really scientific attempt to elucidate principles of treatment which may lead to a cure in these fatal and truly awful forms of disease.

The injection of mixed toxins consisting of the streptococcus of erysipelas and the bacillus prodigiosus (Coley's fluid) does certainly seem to offer some prospect of success, and the results given here should encourage further careful investigation in this direction. It has long been known that not only malignant growths, but chronic ulcers, syphilitic sores, and lupus nodules occasionally disappear very rapidly after an attack of erysipelas, and from this knowledge has arisen the practice of inoculation here described.

**SURGICAL TECHNIQS IN HOSPITAL PRACTICE.** By K. W. Monsarrat, M.B., F.R.C.S.E. Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd., Hirschfeld Bros., 1898. Price 3s. net.

This is an admirable little manual intended for House Surgeons and others, which will be much appreciated in certain quarters. The various rules and suggestions are given in a clear and forcible style calculated to impress them firmly on the mind of the reader. The chapter on "Personal Asepsis" is singularly good, and should be read and pondered by every surgeon and surgical dresser who hopes to succeed in his work. Messrs. John Wright & Co., deserve much credit for the excellent way in which the book has been published.

**LLANGAMMARCH WELLS AS A HEALTH RESORT.** By W. Black Jones, M.D., B.S., D.P.H. London: J. M. Kronheim & Co. 1898. Price 6d.

Amongst the recent additions to British Spas must now be reckoned Llangammarch Wells, a small village in Breconshire,

Central Wales. The spring to which Llangammarch owes its reputation is peculiar, in that its chief mineral constituent is a large amount of chloride of barium. The water is used in gout and scrofulous affections, but its chief use has latterly been in connection with the artificial Nauheim treatment, in which the water forms a good substitute for that of the German Spa. We can heartily recommend Dr. Black Jones's pamphlet to all who desire information upon the nature and uses of the water.

**NEWQUAY. THE CORNISH HEALTH RESORT.** Under the auspices of the Newquay Mercantile Association. Newquay: Hartnoll Bros. 1898.

This report of Dr. Hardwick affords evidence of a proper desire on the part of the local authority of Newquay, by diligent attention to the sanitary requirements of the place, to do all in their power to make the town a model of what a health resort should be. The death rate of Newquay for the year 1897 was 12.6 per 1,000 of the census population, and on the present estimated population it would only be 10.6 per 1,000. The place evidently enjoys much bright sunshine compared with many other English resorts, the mean daily average during the past five years being three hours in winter and seven hours in summer, or a daily average of five hours the year round.

**FALMOUTH OBSERVATORY.** Meteorological and Magnetical Tables and Reports for the year 1897. By Wilson Lloyd Fox, F.R.Met.Soc. and Edward Kitto, F.R.Met.Soc. Falmouth: J. H. Lake & Co., Market Strand. 1898.

This is a model of what such reports should be, and we could wish that the thoroughness which characterises these records was observed at all our health resorts. If this were so it would soon be possible to deal with the subject of the medical climatology of the British Health Resorts in a more scientific and reliable fashion. Great praise is due to Mr. Lloyd Fox, the Honorary Secretary of the Observatory Committee, and Mr. Edward Kitto, the Superintendent of the Falmouth Observatory, for the care and pains they have exercised in compiling these excellent tables and reports.

**TEXT BOOK OF DISEASES OF THE KIDNEYS AND GENITO-URINARY ORGANS.** By Professor Dr. Paul Furbringer; translated from the German with Annotations by W. H. Gilbert, M.D. Vol. II. London: H. K. Lewis. 1898.

We are indebted to Dr. W. H. Gilbert, of Baden-Baden, for this excellent translation of Dr. Furbringer's admirable treatise. The work is scholarly and comprehensive in its scope, and English readers

will find it a very useful text-book dealing with the subject of renal and genito-urinary diseases.

THE MINERAL WATERS AND HEALTH RESORTS OF EUROPE. By Hermann Weber, M.D., F.R.C.P., and F. Parkes Weber, M.D., F.R.C.P. London; Smith, Elder & Co. 1898.

Drs. Weber are to be congratulated upon the rapid exhaustion of the first edition of this work, which has necessitated a new edition at so early a date as that of the present issue, which has been thoroughly revised and in large part re-written. Whilst adhering to the former arrangement of the subject and the methods of classification adopted in the first edition, much new matter, including two entirely fresh chapters, has been added.

The first portion of the work is devoted to the following subjects, in five chapters:—I., Hydrotherapeutics, or the Therapeutic Use of Plain Water; II., Constituents and Classification of Mineral Waters; III., Action of Mineral Waters on the Body in their External and their Internal Employment; IV., the Influence of Change of Air and Diet and Habits in their connection with Spa Treatment—Ordinary Medical and Surgical Treatment at Spas—Muscular Exercises and Massage in connection with Spa Treatment; V., Daily Life at Spas—Duration of the Cure—Necessity for Medical Supervision—Seasons for the Cure—Importance of an “After-Cure.”

The chapters immediately succeeding deal with the various classes of waters, such as Simple or Indifferent Thermal Waters, Muriated or Common Salt Waters, Simple Alkaline Waters, Muriated Alkaline Waters, Sulphated Alkaline Waters, Sulphated and Muriated-Sulphated Waters, Iron or Chalybeate Waters, Arsenical Waters, Sulphur Waters, Earthy or Calcareous Waters, Table Waters and very weakly Mineralised Cold Waters. After this we have a chapter devoted to Marine Spas and Health Resorts, one to Inland Climatic Health Resorts, a third to Grape Cures, Whey Cures—Sanatoria for Dietetic and Special Methods of Treatment, and Sanatoria for Phthisis. A fourth deals with Different Diseases and Morbid Conditions with respect to the Selection of Mineral Waters, Climates, Exercises, &c., and lastly a chapter under the heading Localities for an After-Cure to Spa Treatment. Besides the foregoing, there is a comprehensive and excellent Bibliography, and a useful map indicating the geographical situation of the various health resorts of this country and the continent.

Taken altogether, the work has been honestly and successfully carried out, and will be found a most useful and valuable addition to balneological literature. There is, however, one objectionable feature which we are compelled to notice, and that is the insertion of a selected list of names of medical men practising at the various health

resorts described. We quite agree with the authors that "the knowledge of the character and qualities of the local medical men is equally, or more important" than even a thorough knowledge of the special features of the resorts to which medical men send their patients. We must, however, take strong exception to a method of disseminating such a knowledge which is not only unreliable and misleading, but is unfair to the other local medical men who are not included in these "selected" lists. Either all the local names should be given in alphabetical order, or none at all, but better, we should think, to omit them altogether in such a work as the above.

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## Scientific Gleanings.

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### EXPERIMENTS WITH LIQUID AIR.<sup>1</sup>

THERE is no such thing in Nature's laboratory as an absolute gas, or liquid, or solid; all are relative in temperature. Every substance upon the earth would become vaporous if subjected to a heat such as prevails in the sun; and there is little doubt that even the most refractory of gases would become congealed into a snowy solid of some sort before reaching that absolute zero of theory which has thus far proved unattainable in practice. It is an unquestioned fact that all the water upon the earth was once vaporous. But suppose that the sun's rays should ultimately lose their power—as is confidently predicted by many physicists—and that the earth should thus become cooled to the temperature indicated above, all the water upon its surface would then appear as a dry, brittle mineral, resembling quartz, while the atmosphere would begin to liquefy and fall like dew or rain, forming new lakes and oceans. To me, after the investigations with which I have been occupied for nearly ten years, such a state of affairs is neither incomprehensible nor incredible. Indeed, the very simplest of my illustrative experiments gives rise to a miniature Niagara of this character. To produce it, I have only to dip up from the containing vessel about a quart of liquefied air, and slowly pour it out over the flattened edge of the cup, allowing the stream to fall upon the floor, and the cataract appears forthwith, a remarkably perfect representation, with foaming waters and billowy clouds of mist.

Liquid air is simply air such as we breathe, from which most of the heat originally derived from the sun, has been extracted. This I am now able to effect very easily and cheaply by mechanical means, which will be explained later. As a result, some fifteen minutes after the process is started, a clear, frosty looking liquid begins to pour down from a tube about an inch in diameter, and speedily fills the receptacle placed beneath to

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<sup>1</sup> Selection from "Liquid Air—The Newest Wonder of Science," by Charles E. Trippler, in the *Cosmopolitan*.

receive it. This rate of production can be maintained all day if desired. Each cubic foot of liquid represents nearly eight hundred cubic feet of ordinary air, and in its expansion, as it returns to its gaseous state, lies a power of the highest efficiency, easy to control, ready to be harnessed and utilised. Its temperature is about  $312^{\circ}$  below zero, Fahrenheit.

If a tumbler be filled with the liquid it boils vigorously, absorbing a portion of the heat around it, and at the end of half an hour has completely disappeared, indistinguishably mingled with the air around us, from which it differs only in its greater purity. The tumbler meanwhile has become thickly coated with frost. If, however, the liquid be placed in a glass bulb, set inside a larger bulb, with a half inch space between the two, from which the air has been exhausted, it is so protected by this vacuum jacket that it vapourises very slowly, lasting for a number of hours. In this more quiet state it has the appearance of pure water, except that it shows a pale blue tint which intensifies as the evaporation proceeds. There are, in fact, two entirely distinct fluids present, liquefied nitrogen and liquefied oxygen. It is to the latter that the blue tint is due, nitrogen being absolutely limpid. For transportation—thus far only for experimental use—I place the liquid in a large tin can or cylinder, holding from three to six gallons. This I wrap with a layer of felt, and for protection against rough usage set it inside a slightly larger can of the same sort. Over the top I lay a thick cushion of hair felt, which keeps out heat without preventing free escape of the expanding gases. With this simple arrangement I have kept the liquid for thirty-six hours, and have shipped it from New York to Washington and to Boston. There is no difficulty nor danger in handling it, provided reasonable precaution is used and the gases are not confined. It can be dipped up with a tin cup and poured into almost any sort of dish, like so much water. If you chance to drop the dipper, however, it will shatter like thin glassware. It is a curious fact that this intensity of cold makes iron and steel extremely brittle, while it increases their tensile strength. This condition is only temporary, of course. Copper, gold, silver, aluminum, platinum and most other metals are not so affected. Neither is leather, luckily, for its use in valves, where it is exposed

to great cold, is important ; but rubber becomes as friable as so much terra-cotta.

I will now give a brief description of a few of the most interesting of the experiments illustrating the qualities of this extraordinary fluid. First, I pour a quantity into a basin. Thrust my hand into it. No, I am not joking. You can touch it with perfect impunity, provided you withdraw your hand instantly ; you will only experience a slight sensation of coolness. In precisely the same way you might plunge your finger for a fraction of a second into a pot of molten metal without harm, provided the finger were moist. In both cases the reason is the same ; a thin cushion of vapour is formed next the flesh, which for a moment encases and protects it like a glove—only here the vapour is air, and the heat that liberates it comes from your finger ; but don't be too deliberate in your movements, for a pause would mean a frost-bite at least. I have received some severe "burns" in consequence of treating liquefied air with undue familiarity, and such injuries heal very slowly. You will observe that your hand remains perfectly dry ; the liquid does not adhere to it. This is as fortunate as it is unexpected, for if it wet your flesh as water does, the slightest contact would be disastrous. If I throw a small portion upon your coat sleeve the cloth is not moistened, but is so chilled that it becomes white with frost. An oyster dipped for a moment in a bowl of the liquid becomes as cold as if it had remained in a refrigerator for hours. This makes a very pretty dinner table experiment ; but if you leave the toothsome morsel immersed too long, it becomes as hard as the shell from which it was extracted. Raw beefsteak may be frozen until it rings, when struck, like a piece of bell-metal. While in this condition it may be broken in fragments with a hammer and pounded into powder. Butter, similarly treated, may be reduced to a fine dry dust ; fruit and eggs may be pulverised in the same manner ; but these are substances that may be frozen, though not to the same brittle hardness, by the ordinary cold of winter. Let us now try something more refractory. Mercury remains liquid at all familiar temperatures, but solidifies at about forty degrees below zero. I place half a

pint of it in a paper mould, and pour over the surface a quantity of liquefied air. The "quicksilver," forfeiting all claim to its name, is soon frozen into a rigid bar, resembling a block of tin, but so cold that it would almost blister your flesh to touch it. In each end of the mould was inserted a large screw-eye, and both these are now firmly fixed in the hardened metal. To one of these eyes I attach a cord and suspend the bar like a plummet; to the other eye I fasten a weight of, say fifty pounds. Fifteen or twenty minutes will elapse before the mass is sufficiently thawed to allow the weight to pull out one of the screw-eyes, when it falls to the floor with a sudden crash; it will be fully half an hour before the metal is completely melted. . . .

People often say to me: "Why, I thought the stuff was cold; but it is really hot." In a sense this is true; for it boils while everything around it is frozen solid. And here is the paradox: the harder it boils, the more intense becomes the cold. This fact is well illustrated by the following experiment:—I partly fill a tea-kettle with this anomalous liquid. It promptly boils without fire, but as the metal becomes chilled it appears more quiet. When I place it over the intense heat of a Bunsen burner, it boils rather more vigorously, though without violence—while a sheet of ice gathers on the bottom of the kettle directly over the blaze. This, by the way, is formed from the products of combustion, and consists partly of water vapour and partly of carbon dioxide (carbonic acid gas) congealed by a cold against which the heat of the flame is powerless. I now drop into the kettle a bit of ice, and the ebullition is greatly accelerated—far more so than by the action of the Bunsen burner. It is as if I had thrown in a hot stone. But when I pour in a few ounces of water the tea-kettle fairly gurgles and boils over, sending up from the spout a long jet of steam, mingled with a spray of spurting drops. The water, however, is almost instantly frozen. I invert the kettle and lumps of ice fall out, stinging cold and as dry as chalk. Power enough has been generated in this process to run an engine. . . .

Wool, as you are aware, under ordinary conditions will not burn; it merely scorches and crisps, and gives off unpleasant



odours. But when I have saturated a handful of it in liquid oxygen, at the touch of a match it flashes up like so much gunpowder, and is gone in a moment. A mass of hair-felt treated in the same manner burns more like dampened gunpowder, with a series of sputtering flashes; but it also is completely consumed. The next experiment gives a contrast of extremes of cold and heat which is without precedent. Pouring some of the liquid into a smooth glass tumbler, I dip the bottom into a vessel of water. A thin casing of ice immediately forms about it, but at once begins to crack with the intense cold. By repeated immersion, however, adding coat after coat, I presently get a sort of crackle-ware ice-cup, thick enough to bear handling after the tumbler upon which it has been moulded has been withdrawn. This ice-cup I partially fill with a liquid now largely oxygen; and when I dip into it the end of a steel wire to which a lighted match is fastened, the hard metal burns explosively, like a fuse, with a brilliant effusion of sparks, so that the chilly crystal around it glows like a lamp. On inspecting the cup after this display of fireworks is ended, you will find that the sizzling metal has covered the bottom with beads and pellets of steel—we have actually melted iron in a crucible of ice. As the cup is quite uninjured by its use as a melting pot, I refill it. Then, taking a carbon rod, such as is used in electric arc lamps, and heating the tip to redness, I plunge it into the oxygen. It burns in the boiling liquid with intense brightness, though rather slowly on account of its extreme density. To conclude the experiment, I drop in a lighted cigarette. It flares up like a flash-light. Yet the ice-cup has not thawed in the least, and I set it aside covered with a fine, dry dust of frost.

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#### THE EVOLUTION OF PROTECTIVE CHARACTERS.<sup>1</sup>

(Condensed.)

What are protective characters? In looking round the animal kingdom, we see, for example, that many of the animals living among the snows of Greenland are white, while those

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<sup>1</sup> G. W. Bulman in the *Westminster Review*.

living in desert regions are often of a sandy hue ; in other cases we see animals armed with offensive weapons, as the stings of insects ; or we see certain families of animals resembling certain others, which latter are for some reason or other supposed to be free from the attacks of the usual enemies, as in the so-called mimicry among butterflies and other insects. Among plants, again, we see some provided with spines, thorns, stings, or bristles. All these are examples of protective characters. Among insects, protective characters are extremely common, and may in many cases serve to protect them from insect-eating animals and other enemies. But if it be admitted that they have a certain protective value, it must also be insisted that this has been greatly exaggerated by those who trace their origin to the action of natural selection. Many of the examples brought forward, indeed, are too far-fetched and fanciful to be seriously considered. And even admitting the full protective value claimed for such characters, it would still be a far cry to the possibility of their evolution by natural selection. When the attempt is made to trace in detail the development of the protective characters of any particular species, many difficulties are met with.

Against the theory of the evolution of protective characters in insects by natural selection, then, the following objections must be urged :—

(1) The difficulty of understanding how a slight departure from the normal colour in a freely eaten form could deceive the keen and trained eye of an insectivorous animal.

(2) The small amount of experimental evidence that “protected species” are avoided, and the inconclusiveness of what is brought forward.

(3) It has not been shown that reversions to the “unprotected” type among mimicking species are weeded out by their enemies. And it seems unlikely that minute variations from the type of perfect mimicry would be noticed by insect eaters. But without such weeding out there would be reversion.

(4) If any species were really protected from those destructive agencies which keep others *in statu quo* as regards numbers, such a species ought to be rapidly increasing. The greater the protec-

tion the greater the rate of increase. But protected species have not been shown to be increasing ; some of them, indeed, are rare, and the mere fact of a species not increasing implies the annual destruction of immense numbers of individuals.

Protective characters also occur among plants. Thorny and spiny plants, and plants with stinging hairs, are supposed to have been evolved in the same manner as protected insects. Thus, those plants which tend to produce spines and stinging hairs were preserved in each generation, while those not doing so were destroyed. The first difficulty here is that of understanding how an animal in the habit of browsing on a certain kind of plant could be supposed to avoid a plant here and there because it was—as we must suppose it was at first—very slightly spiny, or had embryonic stinging hairs. The second difficulty is that browsing animals do not avoid the perfected thorny or spiny plant, or even the stinging nettle. Sea holly is one of our most spiny plants, and yet on the Norfolk coast, where it grows abundantly, the horses browse on it freely. The donkey's fondness for thistles is proverbial, and many browsing animals eat furze ; while the nettle is eaten by snails, several species of caterpillar, as well as by cattle. And it cannot be supposed that browsing animals have been evolved *parri passu* with the plants, so as to enable them to feed on the same, for the staple of their food is grass, and they do not need the others. When we think of grass, again, we feel another difficulty. For the grasses are the plants most browsed on by animals, and in which, most of all, anything in the way of spininess ought to have been developed. Yet these same grasses have, according to some, developed a remarkable series of contrivances to protect their pollen from ants. The grasses, then, show us clearly that plants browsed on by animals do not need either thorns or spines to enable them to increase and multiply to maintain and extend their place in nature.

The protective value of stings in nettles and in bees is a doubtful quantity. Here is another example pointing the same moral, viz., that whatever be the real use of stings, or reason of their development, it is not that they protect their owners from the animals which prey upon them. This interesting case of really formidable stings being no protection is from the

"Journal of Sir Joseph Banks." Shooting an albatross on one occasion, he relates how the bird ejected from its stomach quantities of a species of jelly-fish which is armed with really powerful stings. The bird was evidently wont to feed on them. Thus, to bring these remarks to an end, there seems to be no substantial foundation, either theoretical or experimental, for the view that "protective characters" have been evolved by the process of natural selection. But, if not true, it may at least be claimed for it that it is paradoxical; for it is by the ruthless destruction of individuals that the race is supposed to be protected.

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#### THE PROPERTIES OF MINE WATER.

In the course of a paper on "The Upper Schuylkill River," which was read before the chemical section of the Franklin Institute by Mr. Oscar C. S. Carter, Professor of Geology and Mineralogy, Philadelphia, U.S.A., it was pointed out that the Schuylkill River, above the City of Reading, was so strongly charged with sulphuric acid and sulphate of iron that it could not be used as a water supply for Reading and the towns along its banks between Reading and the coal regions. Water of this kind would strongly corrode iron boilers, so that it could not be safely used for the generation of steam. Its effects on the fauna of the Schuylkill was strongly marked. There were practically no fish in the river between Reading and Tamaqua. Molluscan life, which was provided with a protective shell of carbonate of lime, did not flourish in the acid water; their shells would be corroded and slowly dissolved. Mussels, water-snails and crayfish found more congenial quarters in the lower Schuylkill below Reading, where the water loses its acidity. The acidity of the Schuylkill was due to impurities found in coal. Coal generally contained sulphur in two forms, as pyrite, or sulphide of iron ( $\text{FeS}_2$ ), and sometimes as an organic compound of sulphur, which had not as yet been studied. When iron sulphide oxidised on exposure to air, or water containing dissolved oxygen, it begins to disintegrate, and was finally converted

into sulphuric acid and sulphate of iron, both of which were soluble in water. The pyrite was the principal source of sulphur coal ; in many specimens of coal and coaly slate these glistening yellow specks were plainly visible. The various tributaries of the Schuylkill River, in Schuylkill County, flowed through the coal regions, and all the acid mine water which was pumped from the mines found its way into the river. Years ago, before coal was mined in Pennsylvania, the river was free from acidity from its source to its mouth, and fish were found along its entire course. —*Colliery Guardian*.

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#### ROMAN REMAINS IN SWITZERLAND.<sup>1</sup>

An ancient Roman Hospital has been brought to light at Baden, near Zurich, the discovery having been made in connection with recent excavations at Windisch, the Roman Vindonissa. At Vindonissa the two great Roman roads met, the one leading from the great St. Bernard along Lake Lemman and then by Aventicum and Vindonissa to the Roman stations on the Rhine ; the other leading from Italy to Lake Constance by the Rhaetian Alps, the canton which is now Winterthur, Baden, and Windisch, The last point was the station of the seventh and eighth legions. and close by the Roman road the hospital has been discovered. It contains fourteen rooms supplied with many kinds of medical, pharmaceutical and surgical apparatus, the latter including probes, tubes, pincers, cauterising instruments, and even a collection of safety pins used in bandaging wounds. There are also medicine spoons in bone, and silver measuring vessels, jars, and pots for ointment, some still containing traces of the ointment used. The excavations have also revealed a large number of silver and copper coins, the former belonging to the reigns of Vespasian and Hadrian, and the latter bearing the effigies of Claudius, Nero, and Domitian.

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<sup>1</sup> *Public Opinion*, July, 1898.

### Notes, News and Items.

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SIR GEORGE NEWNES, Bart., on Saturday, June 25, transferred as a gift to his native place, the undertaking of the Matlock Cable Tramway Company, Ltd. The property, which was formally handed over to the chairman and officials of the Matlock District Council at the town, is valued at £20,000. A fête is being organised to honour the donor's munificence and will take place this month.

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LORD LEIGH has recently laid the foundation stone of the new wing of the Warneford Hospital, Leamington. Messrs. Young and Hall have designed the new wing, which will accommodate about thirty-two additional patients. £3,000 was raised in connection with the Diamond Jubilee, and this will defray about half the cost of extension. Lord Leigh observed that the hospital was founded in 1832 in consequence of a gift from Dr. Warneford of £3,000. At his death, Dr. Warneford also left £10,000 in trust for the institution.

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ON the occasion of his marriage, Dr. W. E. Williams, who is the Medical Officer of Health for Abertillery, was presented with a set of silver dessert knives and forks, with a silver centre piece and dessert service.

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A REPORT presented to the monthly meeting of the Portrush Town Commissioners on June 7, shows that this favourite seaside and golfing resort is in a most healthy condition. Dr. Martin, the Medical Officer of Health, reports that the water works are in a very satisfactory condition, and the water free from pollution by sewage. During the past winter the sewers have been examined, and where any defects appeared, made right. There have been no deaths from zymotic disease during the past twelve months, and the health of the town has been, and is, very good.

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A MEETING of the Orthopædic Society was held at the Royal Mineral Water Hospital, Bath, on May 14, Mr. Keetley in the chair. A shoe for the treatment of talipes was shown by Mr. William Thomas, and a boot for flat-feet was shown by Mr.

Pagan Lowe, which, he informed the meeting, he had found useful in rheumatic and traumatic cases. A discussion on rheumatoid arthritis from a surgical standpoint was opened by Mr. C. T. Griffiths. He came to the conclusion that operative interference should be more often resorted to when osteophytes were present and the mushroom-shaped ends of the bones had become obtrusively evident. Many cases in which he had with advantage removed bony and cartilaginous prominences from the articular surfaces of chronic rheumatoid joints, substituting depressions, were related by the Chairman. Dr. Wohlmann produced a cast showing typical rheumatoid arthritis. He said this disease was quite distinct from rheumatism, gout and osteoarthritis, and he deprecated early surgical interference other than aspiration. Mr. Tubby held that the disease was due to lesion of the central nervous system, and stated that he thought surgical interference was only justifiable in the final stage. There were also other speakers, including Mr. Jackson Clarke, Mr. Noble Smith, and Dr. Melsome. The meeting passed a vote of thanks to the governors of the hospital for allowing the use of the room.

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Dr. J. P. BEVAN, of Cheltenham, met with an unpleasant experience on the 4th ult. Passing along one of the streets of the town, he noticed a woman who had been struck by one of two men, and stopping to see if he could be of any assistance, he received a blow on the lower jaw which knocked him down, and whilst on the ground he was kicked by one of his assailants. Another gentleman going to his assistance was also knocked down. The men were arrested, one being sentenced to six weeks' imprisonment with hard labour, and the other fined twenty-eight shillings.

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COMMERCIALISM IN MEDICINE.—We have received a communication from one of the local medical men of Sidmouth, in which he takes strong exception to that part of the article which appeared under the above heading in our last issue, relating to a recent controversy in connection with the baths of that town. The communication being marked "private," we are precluded from publishing it. Under the circumstances, it is not practicable to discuss the question which our correspondent has raised; nor do we think it desirable that a journal of this

description should take part in local controversies, and we can only express our regret that certain remarks in the article referred to should have given offence to our correspondent.

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**SOCIETY FOR PREVENTING THE SPREAD OF TUBERCULOSIS.—**

A meeting of leading members of the medical profession in London was held at the residence of Sir William Broadbent on the 22nd ult., with the object of considering the question of forming a Society for preventing the spread of tuberculosis. There were about fifty gentlemen present, including Sir William Broadbent, Dr. Pollock, Dr. W. M. Ord, Mr. Malcolm Morris, Dr. St. Clair Thompson, Dr. Theodore Williams, Dr. Hermann Weber, Dr. Ransom, Dr. Green, Dr. Heron, Dr. H. Mackenzie, Dr. Caufield, Dr. Isambard Owen, Dr. Dawson Williams, Dr. Coupland, Mr. Jonathan Hutchinson, Dr. Percy Kidd, and Dr. Lauder Brunton. Sir William Broadbent occupied the chair, and letters were received, amongst others, from the President of the Royal College of Physicians, and Sir William MacCormack, expressing regret at inability to be present. A resolution was passed unanimously for the formation of a Society to carry out the above object. In the discussion which took place, the balance of opinion was in favour of admitting lay members, ladies and gentlemen, as the great object of such a Society would be to educate and instruct the public in the necessary measures which are required for arresting the spread of tuberculosis.

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**GAS FROM SEWAGE BEDS.—**At the Royal Hotel, Edinburgh, on the 1st ult., the annual conference of the Association of Municipal and County Engineers was resumed, Mr. Claude Robson (Willesden) presiding. Mr. Duncan Cameron, City Surveyor of Exeter, the inventor of the septic tank system of sewage treatment, read a paper on the subject. He said that after one year and ten months' working at Exeter, and dealing with a flow averaging 54,000 gallons per day, the tank showed no signs of requiring the removal of the deposit, and he was watching how long it would be before any of it had to be removed, as he proposed to work it to its utmost limit. He went on to say that one of the most notable points observed in the Exeter tank had been the hitherto unrecognised energy stored in sewage, as evidenced by the production of marsh gas. The



works and public paths adjoining at Exeter had been lit with the gas and incandescent mantles. He had not had more than ten such lights burning at one time, but it was apparent, even under the conditions of leakage existing, that more than twice this number could be kept constantly alight, and this estimate was made during the cold, wet weather of last winter. The gas was innocuous, and could only be detected ordinarily by applying a light.

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**TRAMS ON THE LANCASHIRE COAST.** A GREAT SCHEME COMPLETED.—The great scheme for connecting Fleetwood, Blackpool, St. Anne's, and Lytham, by a tramway system is now a reality. At Fleetwood the lines are laid for the overhead electric trams, but at Blackpool and Lytham sections of the gas trams have been working some time. All that is required now is the Government sanction. The members of the Blackpool Corporation had a special trip from Blackpool to Fleetwood on the 1st inst. on the new lines, and all was found satisfactory. There was a stoppage at Cleveleys, and an adjournment made to an hotel, where Alderman Cocker proposed "Success to the Company," and went on to say that he had dreamt of that scheme for twenty years, but he did not expect to see the great seaside places united in his day. The wonderful enterprise of Blackpool, however, had stirred others up, and it looked as though he should see the scheme in full swing some day. He trusted all the places would be united into one great Blackpool.

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**WATERING PLACES IN SIBERIA.**—The *Daily Chronicle* says: "We remarked the other day upon the opening up of Spitzbergen as a summer resort, but now comes the still more astounding intelligence that Siberia is starting a number of watering-places to compete with the old-established cures of Germany and France. In the western portion of the Czar's Asiatic dominions Kwig and Obachof are recommended as possessing mineral springs of great medical value. But the latter place labours under one serious defect, for whilst the baths may relieve you of gout and rheumatism, the surrounding marshes are certain to implant the germs of malarial fever. Further east there are several hygienic stations on the shores of Lake Baikal, the merits of which are loudly extolled. Still, we hardly think Aix-les-Bains or Carlsbad will suffer much from the competition."

## Exchanges.

THE MEDICAL MAGAZINE, March-June, 1898.  
TREATMENT, April-June.  
QUARTERLY MEDICAL JOURNAL, April, 1898.  
WEST LONDON MEDICAL JOURNAL, April, 1898.  
BIRMINGHAM MEDICAL REVIEW, April-June, 1898.  
LIVERPOOL MEDICO-CHIRURGICAL JOURNAL.  
THE HOSPITAL, April-June.  
REVISTA DE CIENCIAS MEDICAS, April, May and June, 1898.  
AUSTRALIAN MEDICAL GAZETTE.  
THE MEDICAL WORLD.

## Notices.

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Suitable articles, climatological reports, vital statistics, and reports of current events from health resorts are invited.

Correspondents must attest their communications with their proper names and addresses (not necessarily for publication).

Contributions should be written *on one side* of the paper only.

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THE JOURNAL  
OF  
**Balneology and Climatology.**

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VOL. II.

OCTOBER, 1898.

No. 4.

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**Original Communications.**

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ON CIRCUMSTANCES WHICH INFLUENCE THE  
EFFECTIVENESS OF CLIMATIC TREATMENT.<sup>1</sup>

BY G. V. POORE, M.D., F.R.C.P.

*Physician to University College Hospital, &c.*

---

MEDICAL teaching in the present day is nothing if not practical, and some of us find a kernel of good in the methods of Mr. Squeers by which the boy who spelt "w-i-n, win, d-e-r, der, winder," was straightway sent to clean them, and so become practically acquainted with his subject. In all seriousness this method is very necessary with drugs, mineral waters, peptonised foods, and the numerous much be-puffed articles of diet.

I had the good fortune to begin life as the pupil of a practitioner of very high standing in a rural district, and for eighteen months I was handling all the ordinary drugs day after day, and thus became thoroughly acquainted with their physical and many of their physiological qualities. That knowledge has been of great service to me, and is, to my thinking, so necessary that when I find my house-physician has been ordering the last new tar product, it is my invariable practice to send to the dispensary for a sample, and to examine it with the eye, the nose, and the

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<sup>1</sup> An Address delivered before the Society, June 8, 1898.

tongue, with the not infrequent result that we discover that the patient to whom such drug is being administered has to endure some very positive ills as a set off against probable good.

This practical knowledge is especially necessary with regard to climatic health resorts of all kinds, and I take it that one of the circumstances which greatly interfere with the usefulness of climatic treatment is precisely this want of practical knowledge on the part of the prescriber.

It is a frequent cause of regret to myself, and must be also to others who are similarly circumstanced, that I have never resided in the tropics and have never had the good luck to visit our southern Colonies or India. We who practise in London cannot but be impressed with the fact that this City is the centre of the world towards which our patients are centripetally impelled after residence in every variety of climate. It is often very desirable to have a knowledge of the mode of life and the influences for good or ill to which those who consult us have been or will be subjected, and when I see "Jack," who has been invalided from the West Coast, or "Tom," concerning whom I am asked whether he is strong enough to join his uncle in Assam, I confess to an inward feeling that the knowledge of the West Coast and Assam which I may have got by studying books and atlases is not quite the same thing as that personal acquaintance with the details of existence which only comes of residence.

Among many pieces of good advice which I received from the late Dr. Wilson Fox, I am especially grateful to him for one, namely, never when travelling to neglect visiting any locality which had a reputation as a health resort by virtue of its climate or mineral springs. "It will well repay you," he said, "even though such places should be at some distance from your main route." I have followed this advice, and have found it so useful that I shall continue to follow it.

Students who have just taken their qualifying degree or diploma, always receive from me the advice that if an opportunity for travelling offers itself, whether as the companion of a patient or as surgeon to a ship, they should seize it. A few months spent in this way before settling down is well spent.

This advice is not universally given, and I know very well that at University College a distinguished colleague of mine will often advise a student that time spent in that way is generally time lost. It often happens, therefore, that a man who has been dissuaded by my friend, and nevertheless is still longing to see something of the world, will, to ease his conscience, seek further advice from me, well knowing what the tenour of such advice will be ; I say "Go by all means, and find out as soon as possible that the world does not begin and end in Gower Street. You will get a much needed rest for your brain after five years of work at examinations, and you will lay in a valuable stock of health ; you will see new countries, new men, new modes of life ; you will practically find out what the word 'climate' means ; you will see something of diseases which you seldom or never see at home ; and it may be that life on board ship will discipline your mind and teach you to give and take, to make allowance for the peculiarities of others, and not to be exacting about trifles. We have abundant evidence in this country that life on board ship develops a race of men who are distinguished for their kindliness, courtesy, strength, and courage, and to associate with such may well serve as a moral education. The proper study for mankind, especially doctors, is man. Go and return with widened sympathies and an expanded mind, and if you should find that in your absence a rival has earned undying fame by the discovery of a new kind of leucocyte, you must seek consolation in the hope that you have laid in a stock of health and energy that will soon enable you to pull up abreast of him."

The first circumstance, therefore, which interferes with the effectiveness of climatic treatment is the want of knowledge on the part of the consultant of the places to which the patient is to be sent. For my own part, I am always careful to tell a patient who wishes to go to some locality with which I am unacquainted that I am unable to advise him from personal knowledge. I may say that I know the place by reputation and have nothing to say against it and no objections to raise to the patient's proposal, but I am very careful not to make myself answerable for the statements which are put forward in advertisements.

Such an attitude is very necessary in the present day when healing springs are "boomed" by syndicates, and municipalities spend enormous sums in advertising in the hope of recouping themselves by increased trade. We all know how it is done. A poet is hired to do the description; a chemist is found whose report leads one to suppose that he is almost stupefied by the marvellous purity of the drinking water; the reports of the sanitary officials are ransacked for a paragraph which states that the death-rate is 8.046 (mark the accuracy of the decimals), and which, it is hoped, will make the whole world eager to visit this colony of Nestors. These selected facts are joined to a wealth of chromo-lithography which shows that in this favoured locality the sun is always setting in splendour, the almond trees are ever in a state of bloom, and the famous waterfall, despite the perennial clearness of the sky, continues in a maximum flood.

One knows that pictures and photography are of enormous service in disseminating knowledge; but there are certain facts which seldom find entrance even among the bald ugliness of the photograph, such as dust, cutting winds, noises, and odours. The proprietors of a foreign mineral spring have recently called in the aid of the comic artist, and have disseminated pamphlets which are intended, I suppose, to show that in their favoured locality all the pangs that flesh is heir to dwindle to the dimensions of a titillation which excites laughter.

This is an advertising age, and it seems to be true that advertisements attract the public exactly in proportion to their unblushing boldness. Our profession in this country sets its face strongly against all forms of professional advertising, and here it is happily uncommon to find the names of professional men linked with statements which science forbids us to take seriously.

We are, happily, all differently constituted, and I confess to be one of those who still believe that "good wine needs no bush," and am free to admit that I am repelled and not attracted by that damnable iteration which seems sufficient nowadays to bring money to the broadcloth rogue.

Although no mere printed statement will ever be able to replace that intimate knowledge of a locality which residence



alone can give, it is very necessary that such statements should be reliable, and that vital and meteorological statistics should be based upon adequate data. In localities which are subject to periodical invasion of visitors, and which are rapidly growing and developing, it must be almost hopeless to attempt to compare the vital statistics with those of any other locality, or with those of the country as a whole.

Such a Society as this is capable of doing a great service to the profession and the public by the publication of good maps and plans of health resorts, and a few necessary dry facts and figures which should be allowed to speak for themselves.

Before settling in, or advising a patient to settle in, any particular district in England, I should want to know something of the situation, aspect, soil, vegetation, character of surface (whether flat or undulating), population, area, water supply, sanitation, local industries, vital and meteorological statistics, amount of local indebtedness, rateable value of district, rates in the £. I should inquire very carefully into the character of the local council, and should try to avoid the misfortune of settling in a district in which one would be under the heel of a few scheming tradesmen, bent on using the ratepayer for their own ends.

The excellent report issued by the Royal Medical and Chirurgical Society, on the Southern Health Resorts of England, is a step in the right direction for which we cannot but feel deeply thankful to Dr. Ord and his coadjutors.

It is not only necessary that a doctor sending a patient to a health resort should have a practical acquaintance with the main climatic conditions of the country or district, be it mountainous, maritime, or what not; but it is equally necessary that the patient should have the benefit of local knowledge as well. The word "climate" is generally used in a wide sense, but it is very necessary to remember that climates are often extremely localised. Go to the south side of a garden wall running east and west, and bask in the brightness and warmth, feast on the peaches ripe and ruddy, and listen to the hum of insects glinting in the sunbeams. Then go to the north side—damp, all in chilling shadow; content yourself with a few hard pears or acid cherries,

scrape off the damp moss growing in the mortar, and sniff the fusty smell arising from the dank sour soil. Can any contrast be greater? And yet these climates are only separated by a space of some nine inches. In houses there are rooms with different climates; in towns there are streets with different climates; and in districts, as we all know, it makes all the difference whether the house is on the north or south side of a hill; whether it is in a hollow where the air stagnates and the mists are only reached by the sun when the day is far advanced; or whether it is fairly open to the purifying influences of the wind and sun.

Another circumstance which interferes with the effectiveness of climatic treatment is the ability of the patient or the patient's family to bear the expense of it. If, in order to compensate for the expense of the journey, a patient is obliged to forego some of the comforts to which he is accustomed when at home, it is obvious that the advantages which are to be expected from the journey are made less probable. The patient who journeys in state to his villa in the sunny South with the command of servants, carriages and horses, and all other luxuries that anxious forethought can suggest or wealth supply is in a very different position to those who "make every sacrifice" in order that the doctor's wishes as to locality may be carried out, no matter how penuriously. Climatic cures attempted under the latter circumstances are seldom successful, and are a mistake from every point of view.

I think we should always be exceedingly careful before making recommendations to ascertain that there are adequate means for carrying them out effectively. If possible, our recommendations should be agreeable to the patient. "The labour we delight in physics pain," and in making choice of a locality we should always give reasonable attention to the likes and dislikes of the patient.

Many of us are painfully insular. It is a defect, no doubt, but unfortunately it is very often a fact, and we not infrequently meet with patients who have a downright repugnance to foreign travel. It is unnecessary to say that persons of this class should be sent to English rather than to foreign health resorts.

I remember once encountering at Homburg an English

squire of the old type, whose sojourn at this famous resort was most distasteful to him. He had come alone. He spoke no word of German or French; he hated the daily routine of fashionable conventionalities; he hated the food; he hated the light wines; he hated the noise of the *table d'hôte*. To be up at six in the fresh morning air was no novelty to him, and to one accustomed to an outdoor life in a healthy English village, with its park, pleasant fields, and woodlands, the change which he had been ordered was no change for the better. The whole thing was to him like the treadmill to a prisoner. He was longing to be back to the harvesting operations on the home farm, and, like a famous statesman, he protested that he preferred the gout to the annoyance of the prescribed cure.

In selecting health resorts we have to endeavour to suit the patient to the place and the place to the patient, and this can scarcely be done without some personal knowledge of bath-life both in England and on the Continent. To send a fashionable person to a quiet place, or a quiet person to a fashionable place, is an error which should be avoided where possible.

It is a very necessary thing that an invalid should have amusement and generally acceptable surroundings. This I think is particularly necessary with tuberculous patients, who become depressed if they are congregated in herds and are constantly comparing notes as to the progression and retrogression of their troubles.

I once had the good luck to be taken ill in a *Curhaus* for the tuberculous. The house had been carefully and thoughtfully constructed, and presented many points of excellence, but the result of my eight days' sojourn, in weather which happened to be execrable, impressed me with the idea that the collection of phthisical patients in great numbers in one locality, or, still more, in one house was a mistake, quite apart from the doctrine of contagium vivum, which has caused a very general change of opinion on this question. Breakfast in this establishment was a most depressing meal; the general want of light in the huge rooms, which had been built partly with an eye to theatrical entertainments, the listless way in which the guests without healthy appetite chipped their eggs and played with the coffee,

the flushed cheek, the bright eye, the occasional bursts of coughing, were all painful and depressing. The scraps of conversation were equally so. Mamma could not come to breakfast, her temperature was up again, and she was ordered to stop in bed. Tom had had a little return of hæmorrhage. Mr. So-and-so had been sick all night, and once we learnt that the Colonel who had been there all the winter had "left," which turned out to be true, for he had left this world for good. I was very thankful when my own trivial ailments enabled one to continue one's journey and mix again with healthy persons.

There can be little doubt that modern facilities for travelling and modern modes of life are a danger to health resorts, because they are apt to bring about an undue concentration of population. A couple of years since I spent a week in a seaside place which had been known to me by reputation as a pleasant village remote from the haunts of man known and patronised only by a select and favoured few. Now, it has two railway stations connecting it with two different railway systems. The place is rapidly being transformed into a sort of Chicago-super-Mare. Land syndicates, water companies, gas companies, tramway companies, are making money by handfuls. The speculative builder is rampant. The new streets bid fair to be absolutely straight and at right angles to each other, the pavements will rival those of Cheapside, and the curtilage of the houses will be reduced to that almost invisible minimum which is sanctified by the name of "model." Soon will follow invitations to trippers who will respond in trainsful, and these will be catered for by every form of noisy amusement which one meets with in the London streets and on racecourses. These health resorts soon cease to be desirable places for invalids or for tired and jaded persons who need rest, albeit that they serve excellently as places of amusement for the teeming populations of our big towns.

Occasionally it may happen that the popularity of a place may lead to serious overtaxing of the accommodation for visitors. I remember being at a well-known spa in Auvergne at the height of the season, and such was the competition for baths that invalids were sometimes obliged to take their turn at this Bethesda literally in the middle of the night.

The amusements provided for chronic invalids are most important, and I think that we shall all agree that crowded assemblies indoors, whether they be for amusement or for any other purpose are not permissible. I leave out of consideration the many excellent out-door games which need no recommendation nor criticism in an assembly of Englishmen. The question, however, of the kind of amusement to be provided between dinner and bed-time is all important, and especially so in winter. The winter evenings are long, even in the south of Europe, and the temptation for young people to participate in crowded balls or equally crowded theatrical entertainments is very great. It is clear, however, that such temptations should be avoided if possible. Is it too much to hope that it might be possible to dance under conditions of dress and ventilation which should satisfy the demands of hygiene?

Nothing can have more influence on the effectiveness of climatic treatment than the house in which the patient lives. At midwinter in Europe the patient must be indoors for nearly twice as many hours as he is out of doors, and it might be urged that the house has twice as much influence for good or ill as the "climate."

It seems to me to be quite clear that the average modern hotel can be no fit place for the permanent residence of a chronic invalid.

The fault of the modern hotel, which is an invention intended to economise space in a crowded city, is that the area is wholly inadequate for the cubic contents. As a consequence the population in a crowded hotel is so concentrated that anything like fresh air, privacy, or quiet is impossible. The city hotel is too often imitated in the country, and, as a matter of fact, I have seen one of these towering foul-air traps standing in the middle of ten acres of ground in a developing watering place in England.

If one wants to see wholesome and sensible planning of a house one must look at an infectious hospital, where everything is done to prevent the travelling of foul air (like Satan in the book of Job) "to and fro" and "up and down"; and where in the details of internal construction facility for cleaning is the

paramount object. A maximum of area and a maximum of simplicity, with a minimum of plumbing, no hidden pipes, no lifts, no heavy cornices, no embossed ornaments on walls and ceilings. In short, the construction of a hotel should in many respects resemble that of a hospital. The mediæval college as seen at Oxford or Cambridge is the best model for a hotel—the living rooms and bedrooms in one-storeyed or two-storeyed buildings and connected with the public rooms by cloisters or corridors. The kitchens, hall or *table d'hôte* room, library or news room, smoking room, billiard room, and so forth should be separated from the living rooms, and in the living room the visitor should be able to “sport his oak” at will.

I am far from saying that a country hotel should be built without regard to æsthetic considerations, but I feel sure that all expenditure devoted to the overloading of the rooms with a mass of vulgar ornamentation is money misspent, and from the point of view of health and comfort it is senseless to be paying interest on capital sunk for such objects.

Hotels, especially those used by persons seeking health, sadly need reformation. Decoration should be chaste and simple and no guest should succeed another until the rooms have been, in housekeepers' phrase, thoroughly “turned out.” It surely must be possible to attain an elegant simplicity without giving the appearance of an “institution.” In these days of contagia viva this reform is sure to come.

The food, one need hardly say, should be simple and first-rate of its kind. The bread, unless ordered to be otherwise, should be real wheaten, fermented bread ; the coffee should have no admixture of taraxacum or chicory ; the milk should be new and fresh ; the butter should not be margarine nor be made with “separated” cream, which produces a negative grease which is not butter on the palate, whatever chemists may say to the contrary ; the eggs should not be fusty ; the “roast” meat must not be cooked in the oven ; the green vegetables must not be soaked in fat nor have their colour deepened with carbonate of soda ; the chicken must be tender and the fish not so high as to necessitate its being smothered in herbs and cheese to make it passable. In short, the diet should be composed of first-rate

materials and should be ample and not too complicated. To keep even a strong man at table in a hot, close, crowded room for an hour or more while he discusses the various items of a meretricious *menu*, consisting of disguised garbage catalogued in meaningless French, is a sure way to dyspepsia. The quantity of food must be sufficient. I can recall an experience of a *pension* in which I once spent a week, and a delightful week—for the situation and surroundings were most charming—in which the *pensionnaires* were compelled to rise from their meals not merely hungry but voracious; and another where the food was not merely small in quantity but uniformly second-rate, and we made the discovery that the tradesmen of the adjoining town were invited to supply the hotel with stale bread, and generally with such other articles as were unable to stand the competition of the open market.

It is hardly necessary to speak of wine. Hotel wine is a by-word all the world over, and it is well known that the hotel keeper looks to make his profit out of the wine. This, of course, is wrong. On the one hand, it is necessary that the small quantity of wine or beer which is needed by a chronic invalid should be thoroughly sound and fresh drawn at every meal; and on the other hand, the guests must be prepared to pay a good remunerative price for their rooms and food, and to remember that the cost of lodging must be relatively great in establishments which are only open for part of a year. It may be true that in some primitive spots the cost of living is, as compared with London or Paris, singularly small; but, nevertheless, people are themselves to blame if they take up their residence in establishments in which the tariff is too low to be properly remunerative. That we must all be prepared to pay a fair price for a good article goes without saying.

When we advise a patient to leave the certainties of home for the uncertainties of a health resort, it is necessary as a rule to place the patient under medical care, and we none of us like to place the patient under the professional care of anyone concerning whose qualifications, character, and abilities we know nothing. It is very possibly a piece of gross insular prejudice upon my part that I should prefer to place English patients under the care of

a doctor of their own nationality—one who knows the mode of life, customs, constitutions, and necessities of the patient. I shall be accused of additional prejudice if I say that therapeutic specialists are often prone to run their special therapeutic agent, be it a drinking water or a bathing method, a little hard, and occasionally to the detriment of the patient.

Further, it is notorious that health resorts are the happy hunting grounds of irregular practitioners of every kind and description, so that it behoves us to be exceedingly circumspect as to the selection of a practitioner to whose care a patient is to be confided.

The question of reciprocity of practice is now agitating the medical world, and undoubtedly it is a question of great importance. It is not, I think, very probable that English doctors will continue to send patients to places where they cannot have the advantage of the professional care of their own countrymen. The difficulties of obtaining this advantage for our patients seems, in Europe, to be upon the increase, and, as in commerce so in medicine, no country seems inclined to follow our example of free trade.

This state of things will lead to the improvement of our health resorts at home, and to the establishment of new ones in our colonies and dependencies.

The world gets smaller every day, and the facilities for travelling increase almost hourly. When one can get to the Antipodes in a month, basking beneath the awning of a palatial steamboat, and have most of the comforts of home in the shape of fresh bread, fresh fruit and vegetables and fresh meat, and the daily luxury of a salt-water bath, it is evident that the difficulties of placing our various colonial climates at the disposal of British invalids are getting less and less.

Already, both in Egypt and South Africa, sanatoria are being established which are attracting much and well-deserved professional attention, and doubtless in our other colonies, from Canada on the one hand to New Zealand on the other, similar advantages will soon be found. The invalid who is obliged to run away from the rigours of our winter enjoys in the Southern hemisphere the advantage of a long day, which, as it gives him



the opportunity of being more out of the house than in it, is, of course, a priceless boon.

To sum up, I may say that the circumstances which often interfere with the efficiency of climatic treatment are :—

(1) Want of practical knowledge on the part of the prescriber.

(2) The selection of an undesirable locality for residence.

(3) The want of adequate means on the part of the patient.

(4) The want of adaptability of the patient to his surroundings.

(5) Overcrowding in ill-constructed and ill-planned houses.

(6) Second-rate food and wine.

(7) The want of reliable English doctors.

These deficiencies it is the province of this Society to lessen and remove. Already your excellent Journal is disseminating a large amount of useful knowledge, and I have no doubt that the real wants of our expatriated invalids will be adequately provided if they should receive distinct utterance at the hands of a powerful Society like this.

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## IRELAND : ITS CAPITAL AND SCENERY.<sup>1</sup>

BY JOHN WILLIAM MOORE, M.D., UNIV. DUBL.; F.R.C.P.I.

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*Fellow of the Royal Meteorological Society ;*

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IN taking the chair at the inaugural meeting of the Section of Chemistry and Meteorology in this great Hygienic Congress, my first duty is to welcome and to thank those who have kindly undertaken to make communications to the Section, or to take part in the discussions which may arise in connection with the topics set down for our consideration.

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<sup>1</sup> Being an Address delivered before the Section of Chemistry and Meteorology at the Congress of the Royal Institute of Public Health, held in Dublin, August 18 to 23, 1898.

I have, in the next place, to express my grateful sense of the honour which has been conferred upon me in asking me to preside over this Section. It is an honour of which anyone might well be proud, and I am deeply sensible of the high compliment it implies.

Yet I approach my task with some misgiving, for, even if a long apprenticeship as a practical meteorologist may seem to bestow upon me some slight claim to the chair in a Section of Meteorology, I can in no way be regarded as an authority in the domain of the more precise and erudite science of Chemistry. It is, however, no small encouragement to reflect that in the list of Vice-Presidents of the Section are found names of the highest rank in the walks of chemical science. In the lustre then of the brilliant reputation of my colleagues I am content to lose my own feeble shining, even as

"The glow-worm shows the matin to be near,  
And 'gins to pale his ineffectual fire."

In seeking for a topic for an opening Address, it occurred to me that some account of the climatology of the city and scenery of the country in which we meet would be appropriate to the occasion.

Dublin, the metropolis of Ireland, stands at the extreme western end of the beautiful Bay of Dublin, close to the mouth of the River Anna Liffey, along both north and south banks of which the city extends for a distance of some two miles. It is 292 miles in a direct line W.N.W. of London, 138 miles W. of Liverpool, and 69 miles W. of Holyhead, and is situated in latitude  $53^{\circ} 20'$  N., longitude  $6^{\circ} 17'$  W. It comprises an area within the municipal boundary of 3,733 acres, containing, in 1891, 25,764 inhabited houses and a population of 245,001. But these figures by no means represent what may be called "Greater Dublin," or the Dublin Registration District. This consists not only of the city proper but also of the populous suburban districts of Rathmines, Donnybrook, Blackrock, Kingstown, Clontarf, Howth, Coolock, Drumcondra, Finglas, Glasnevin and Palmerston. The population of this "Greater Dublin" was, in 1891, 349,594; and its extent is 24,693 statute acres.

The origin of the city is lost in the mists of antiquity. The

Greek geographer Ptolemy, writing A.D. 140, speaks of a small tribe, the Eblani, as having established themselves at Eblana ("Civitas Eblana"), which was probably the site of Dublin. The dark peat-stained waters of the Anna Liffey gave its present name to the Irish capital, for the Celtic *Duibhlinn* signifies the "black pool." Among the Irish-speaking population of the west of Ireland, Dublin retains its ancient name of Ath-cliaith, or more fully Bally-ath-cliaith, the Celtic *Baile-atha-cliaith* meaning the "town of the ford of the hurdles." From this name the obvious inference is that a wickerwork causeway stretched across the Liffey, and that in its vicinity the town sprang into existence.

The site of Dublin was originally not only beside a pool of dark water (*Duibhlinn*) but in a swamp, for the prefix "Anna" in the name *Anna Liffey* signifies literally a watery place, a marsh or swamp, annagh (*eanach*) being derived from *ean*, water. It is this untoward circumstance, perhaps, which in modern times has gained for Dublin so evil a reputation for the endemic prevalence of typhoid fever, and for a susceptibility in summer and autumn to diarrhoeal—or, as they are well termed, "filth" diseases. In 1888, Dr. T. W. Grimshaw, C.B., Registrar-General for Ireland, in conjunction with Sir Charles A. Cameron, Medical Superintendent Officer of Health for the City of Dublin, read before the State Medicine Section of the Royal Academy of Medicine in Ireland a paper on the distribution of enteric fever in this city. The authors found that the fever was particularly prevalent in districts situated on pervious strata of the soil and subsoil. The rate of prevalence of enteric fever among the residents on the pervious strata was 6·82 per 10,000 per annum, while on the impervious strata it was only 4·6. One death from enteric fever occurred in every 365 inhabitants residing on the pervious strata, but one such death only in every 531 inhabitants dwelling above the impervious strata.

The pervious stratum consists of a sand and gravel bed formed by an old raised sea-beach, which occupies the centre of the city along both sides of the River Liffey, into which all the city sewage has hitherto been discharged. This gravel bed rests on clay and rock, so that it retains all the fluid filth cast upon it, or which has soaked into it from the river. At the time of writing, a costly

and extensive system of main drainage is in process of construction. By this the gravel bed will be effectively drained, with, no doubt, a highly beneficial effect upon the health of the city, especially in respect to the prevalence of, and fatality from, "filth" diseases.

Dublin is a handsome, and in parts a picturesque city. Many of the public buildings can lay claim to considerable architectural beauty, the principal thoroughfares are broad and straight, with the exception of Grafton Street, which is far too narrow for the great stream of life and bustle which flows through it for many hours each working day. The city is well supplied with "lungs" in the splendid squares on both north and south sides of the intersecting river. One of the largest of these open spaces is the ancient and far-famed University of Dublin with its quadrangles and far-stretching gardens and College Park. The grave defect, which does much to neutralise the beneficial effect of the situation and surroundings of the capital upon public health, is the housing of the poorer classes. The residential houses in the older parts of the city, especially in the Coombe district and the "Liberties," have long since been broken up into tenements. These are the dwelling-places of a large proportion of the poorer inhabitants, and so have come to play a ghastly part in the "bills of mortality" for generations. From their structure, age, and insanitary state these tenement houses are unwholesome to the last degree, and all sanitary reformers agree that the housing of the poor is one of the most pressing questions of the day in Dublin.

Much has been done of late years to abate the crying evil of the Dublin tenement houses—witness the splendid work of the Dublin Artisans' Dwellings Company, of the Corporation of Dublin, and last, not least, of the Guinness Trust, which has given living expression to the philanthropy and princely munificence of the Right Hon. Lord Iveagh, K.P. A further movement is on foot at present to provide sanitary accommodation on very reasonable terms for even the very poor among the industrious and sober classes of the population.

From a hygienic standpoint, the meteorological factors of greatest importance in determining the climate of a given town

or place are :—(1) mean temperature ; (2) extremes of temperature ; (3) rainfall ; (4) rainy days ; and (5) relative humidity. Of somewhat less importance are :—(6) mean atmospheric pressure ; (7) amount of cloud ; (8) direction and force of the wind.

*Mean Temperatures.*—Dr. Alexander Buchan has calculated the mean monthly and annual temperature of the City of Dublin on a mean of forty years, from January, 1856, to December, 1895. His results are as follows :—

January = 41·1°	May = 52·3°	September = 55·6°
February = 42·0°	June = 57·5°	October = 49·4°
March = 43·3°	July = 60·3°	November = 44·5°
April = 47·3°	August = 59·4°	December = 41·6°
Year = 49·5°.		

*Extreme Temperatures.*—Since January, 1865, the extreme readings of the thermometer in Stevenson's stand recorded in Dublin have been 87·2° on July 15, 1876, and 13·3° on December 14, 1882—a range of 73·9° Fahr. But these values are very exceptional. The average annual range of mean temperature is not quite 20°—viz., January, 41·1° ; July, 60·3°—that is, 19·2° F.

*Rainfall.*—In the “Rainfall Tables of the British Islands, 1866-1890,” published by the authority of the Meteorological Council in 1897, the mean rainfall at Fitzwilliam Square, Dublin, is given for the twenty years, 1871-1890, as follows :—

Inches	Inches	Inches
January = 2·09	May = 1·89	September = 2·23
February = 2·22	June = 1·98	October = 3·18
March = 1·97	July = 2·63	November = 2·70
April = 2·16	August = 2·91	December = 2·35

Total for the year = 28·31 inches.

The “rainfall” is the measurement at 9 a.m. each day, and is entered to the day preceding, to which fifteen of the previous twenty-four hours belong. A “rainy day” is one on which at least five thousandths (·005) of an inch falls within the twenty-four hours from 9 a.m. to 9 a.m. In the twenty years, 1865 to 1884, the average monthly and yearly number of rainy days in Dublin was :—

January = 17·1	May = 15·1	September = 14·5
February = 17·6	June = 14·7	October = 17·2

March	= 16.5	July	= 17.6	November	= 16.8
April	= 15.0	August	= 15.5	December	= 17.0
Total for the year = 194.6.					

Borrowing the language of the agriculturist we may roughly regard the first quarter of the year (January-March) as "seed-time," the second quarter (April-June) as "growing-time," the third quarter (July-September) as "ripening and harvest-time," and the fourth quarter (October-December) as "fallow-time." We find then that the average precipitation in "seed-time" amounts to 6.28 inches, distributed over 51.2 days; that in "growing-time" is 6.03 inches, on 44.8 days; that in "ripening-time" is 7.77 inches, on 47.6 days; and that in "fallow-time" is 8.23 inches, on 51.0 days.

February, 1891, was the driest month on record in Dublin. There were only two rainy days during the whole month, and the rainfall was but .042 inch. September, 1865, also, had only three rainy days, with a rainfall of only .056 inch. The mean temperature of the latter month was 61.4°, or 5.8° above the average (55.6°) for September.

On the other hand, December, 1876, had a rainfall of 7.566 inches on twenty-two days. In October, 1880, also, 7.358 inches of rain fell, on, however, but fifteen days—the precipitation on the 27th alone was nearly 2½ inches (2.736). In July of the same year, 6.087 inches of rain fell on twenty-four days. In November, 1888, the rainfall was 6.549 inches on twenty-six days. The *wettest* month—that is, the month in which there were most rainy days—was July, 1871, when 4.391 inches fell on no less than twenty-eight days.

An inch of rain—equivalent to a downpour of 101 tons of water on every statute acre—seldom falls within twenty-four hours in Dublin. On October 27, 1880, however, the measurement was 2.736 inches; on August 13, 1874, also, 2.482 inches of rain were registered; and on May 28, 1892, 2.056 inches were recorded.

The comparatively small precipitation in and near Dublin clearly depends on the geographical surroundings of the Irish capital—its situation in the east of the island, and the grouping of high lands to the S.E., S., and S.W., whereby the rainbearing

winds are drained of their superabundant moisture before they reach the valley of the Liffey and the plains lying north of that river.

*Relative Humidity.*—By this term is meant the percentage of saturation of the atmosphere with aqueous vapour. The relative humidity of absolutely dry air is 0 ; that of saturated air, when dew is deposited or fog forms, is 100. In Dublin the *mean relative* humidity in the twenty years, 1871-1890, was 82·5 per cent. (81·2 per cent. at 9 a.m. and 83·8 per cent. at 9 p.m. It is highest on an average in December (86·7 per cent.) and lowest in May (76·2 per cent.)—this latter being the month when temperature is rising most quickly, and when, therefore, the capacity of the air for aqueous vapour is at a maximum.

*Mean Atmospheric Pressure.*—Dr. Alexander Buchan calculates the mean monthly and yearly atmospheric pressure, reduced to 32° and mean sea level, in the City of Dublin during the forty years, 1856 to 1895 inclusive, to be :—

Inches	Inches	Inches
January = 29·870	May = 29·956	September = 29·919
February = 29·923	June = 29·981	October = 29·867
March = 29·885	July = 29·931	November = 29·876
April = 29·914	August = 29·903	December = 29·887

Annual mean = 29·909 inches.

From this Table it appears that the monthly mean pressure rises to 29·981 inches in June, and falls to 29·867 inches in October. I may state that the absolute extreme readings of the barometer at any time taken by me were—maximum, 31·020 inches at 10 a.m. of January 9, 1896 ; minimum, 27·758 inches at 2.30 p.m. of December 8, 1886. These readings assuredly represent the extreme range of atmospheric pressure, reduced to sea-level, in Dublin, namely, 3·262 inches, rather more than 3½ inches.

*Amount of Cloud.*—This climatological element varied in the twenty years, 1871-1890, from 64·5 per cent. at 9 a.m. to 56·5 per cent. at 9 p.m., the mean being 60·5 per cent. February is the most cloudy month (67 per cent.), May is the least so (55 per cent.). The clearness of the sky at 9 p.m. in May is a striking characteristic of the meteorology of that month.

*Direction of the Wind.* — As regards this element, 14,613

observations were made during the twenty years, 1871-1890, with this result :—N., 870 ; N.E., 941 ; E., 1,409 ; S.E., 1,267 ; S., 1,323 ; S.W., 2,051 ; W., 4,030 ; N.W., 1,750 ; calm, 972.

The preponderance of westerly (S.W. to N.W.) over easterly (N.E. to S.E.) winds is very striking ; the figures are 7,831 and 3,617 respectively, more than two to one in favour of westerly winds. But the great excess of due W. winds is still more remarkable. They number 4,030, or nearly double the number of S.W. winds, 2,051. Partial deflection of S.W. winds by a range of mountains with summits of 2,000 feet and upwards, to the southward of the city, in some measure accounts for this ; and a further explanation is to be found in the frequent occurrence of light westerly land breezes during calm, cold weather in winter. Correlated to this class of westerly winds are the light easterly and south-easterly sea-breezes of the day-time which so materially modify the heats of summer in Dublin, and go so far to swell the number of E. and S.E. winds included in the table.

*Gales* were recorded on 413 occasions at 9 a.m. or 9 p.m. within the twenty years. Of these 171, or considerably more than one-third, happened within the first quarter of the year, only 38 in the second, 56 in the third, and 148 in the fourth. January (with 74 gales) was the stormiest month. There were only 4 gales in June.

*Thunderstorms* occurred on 176 days, of which 13 were in the first quarter, 62 in the second, 78 in the third, and 23 in the fourth. June (with 34 storms) and July (with 50) were the months in which electrical disturbances most frequently took place. Only one thunderstorm occurred in December during the twenty years.

There were 408 days upon which *snow* or *sleet* was noted. Of these 258 fell in the first quarter, 36 in the second, none in the third, and 114 in the fourth. Of 622 days on which *hail* was recorded, 255 were found in the first quarter, 160 in the second, 40 in the third, and 167 in the fourth. The relative frequency of hail in the warmer months is noteworthy.

The climate of Dublin is, in the fullest sense, an *insular* one, free from extremes of heat and cold, except on very rare occasions, and characterised by a moderate rainfall (about 28



inches annually), which is distributed, however, over a large number of days (about 195 in each year). Clouded skies, a high degree of humidity, and a prevalence of brisk winds, chiefly from westerly points of the compass, make up the climatology of the Irish capital.

In common with the rest of the British Islands, Dublin owes its mild equable climate in great measure to the proximity of the North Atlantic Ocean and its surface current of warm water, usually called "The Gulf Stream" because its head-springs arise in the Gulf of Mexico. This sets in a north-easterly direction, laving in its course the western shores of Europe, and carries even into the Arctic Regions north of Scandinavia temperatures from 20° to 30° above those due to the latitude alone.

Another obvious cause of the mildness of the climate is the overwhelming prevalence of south-westerly and westerly winds, which are both warm and moist. These winds have been shown to form part of a cyclonic circulation round a large area of low atmospheric pressure, the centre of which in winter lies not far from Iceland over the North Atlantic. Only in spring do these periodic winds give place to northerly and easterly breezes.

But local natural advantages as regards situation exercise a further beneficial effect on the climate of Dublin. A few miles S. of the city lies a range of mountains, with summits varying in height from 1,000 to more than 2,500 feet. This mountain chain intercepts the vapour-laden winds at all points between S.S.E. and S.W., and so the rainfall is diminished and the sky is comparatively cleared during the continuance of the southerly and south-westerly winds, which so frequently prevail. The absence of any very high ground to the northward of the city—with the exception of the Hill of Howth, which rises, however, only to 563 feet—also prevents excessive precipitation with S.W. winds. It is true that with easterly (S.E. to N.E. or N.) winds the precipitation (often in the form of hail, and in winter of sleet or snow) in and about Dublin exceeds that which occurs at such a time inland or on the Atlantic coasts. Were it not for this "lee-shore" condensation the Dublin rainfall would be considerably smaller even than it is.

The second local feature which ameliorates the climate of the capital is the proximity of the sea to the eastward of the city. The keen, dry, searching easterly winds of winter and spring are much softened in their passage across the Irish Sea, so that during their prevalence the thermometer occasionally stands some 5° or upwards higher in Dublin than it does at Holyhead, although this latter place is actually on the sea. It is true that the converse holds good during westerly and north-westerly winds, when severe frost sometimes occurs in winter in Dublin, while the thermometer remains decidedly above the freezing point at Holyhead. Yet these latter winds are never so piercingly cold and parching as those from easterly points. Nor is it in winter merely that the Irish Sea confers a benefit upon Dublin. In calm, clear weather in summer time, no sooner has the sun mounted high in the heavens than a cool, refreshing sea-breeze—a typical “inbat,”<sup>1</sup> as the modern Greeks call it—sets in towards the land, so that consequently extreme or oppressive heat is rarely experienced. Indeed, an oppressive atmosphere happens only when a damp, warm S.W. wind is blowing, with a more or less clouded sky. Temperatures above 80° in the screen in Dublin nearly always coincide with winds off the land, from some point between S. and W., and a clear or only slightly clouded sky.

Among climatic epiphenomena, the infrequency of thunderstorms and the relative frequency of hail-showers in Dublin are worthy of note. In winter fog and frost often prevail in the city, when a northerly breeze is blowing along the coast, accompanied by a higher temperature, and perhaps showers of rain. Lastly, in summer, with a westerly wind, heavy planetary showers fall at times in the valley of the Liffey, while the neighbouring higher lands enjoy dry weather.

This may or may not be a suitable occasion on which to direct attention to a much-needed reform in the keeping of time in Ireland. For many years the time-standard in this country has been so-called “railway-time,” more strictly Dublin time, or rather the time of the meridian of Dunsink Observatory, Co.

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<sup>1</sup> Evidently a derivation from *ἐμβάτω*.

Dublin. It is, however, a matter for consideration whether Greenwich time should not be adopted as the standard for Ireland, as it already is for Great Britain. If an objection is raised that a national question is involved, it is only necessary to point to Scotland and Wales, where the national sentiment runs as high as it does in Ireland, and which have long since adopted Greenwich time. As a matter of fact, however, the question is that of West European time, which is applicable to a zone extending  $7\frac{1}{2}$  degrees of longitude both east and west of the Greenwich meridian. France has lately adopted this time, just as Switzerland and Germany have arranged to set their watches by Central European time which extends from  $7^{\circ} 30' \text{ E. long.}$  to  $22^{\circ} 30' \text{ E. long.}$

For many years Greenwich time has been adopted in the Postal Department, and Irish telegrams are despatched and received by it. As a matter of public convenience, the principle should be extended, and so the existing confusion in time-tables and in telephonic communication between Great Britain and Ireland would cease. Let the secretaries of the various steamboat and railway companies agree upon so desirable a reform, and the thing is done. It would, however, be necessary afterwards to amend the Statutes (Definition of Time) Act, 1880, which provides that whenever any expression of time occurs in any Act of Parliament or other legal instrument, it shall be held in Great Britain to be Greenwich Mean Time, and in the case of Ireland, Dublin Mean Time.

I may not close this Address without a few words in praise of the natural beauties of the land in which we meet, in which many of us dwell, and which we love so dearly.

Ireland is, in truth, a land of poetry and romance. Enshrined in the name of every hill and glen, of the mountain brook or the flowing river, of the moorland or the wave-washed crag, even of the busy town, is some poetic thought (of deep pathos) or germ of legendary lore. Within a few miles of the capital itself we meet with Ben Edar, the ancient name of Howth; the Phoenix Park, where Phoenix is a corruption of the Irish *Fion-uisge*, the "fair water"; Bohernabreena, the "road of the mansion"; Glen-na-Smoel, the "valley of the thrush;" Glendoo, the "black glen";

Dargle, the "valley of oaks." Enniskerry is the representative of *Ath-na-scairbhe* [Anascarry], "the ford of the scairbh" [scarriv] or "rough river-crossing." Shankill is the Irish *seincheall*, "old church" [Latin, *senex*]. Killiney is "the church of Lenin's daughters," *Cill-Inghen-Leinin*.

Nor are traces of the Danish dominion wanting in the nomenclature of places in and near the capital. Oxmantown, a district of the city north of the river, was originally Ostmanby, that is, the "town of the eastmen" (*i.e.*, Danes). Howth is the Danish *Hoved*, "a head." Lambay is "Lamb-island" (*ei, ey, or oe* being Norse for island) [*cf.* *Farø*]. Ireland's Eye is a mis-translation into Danish of the Irish *Inis-Ereann*, that is, Eria's island—Eria having been a lady of the olden time, not *Eire*, Ireland. Leixlip is wholly Danish, old Norse *Lax-hlaup*—*i.e.*, Salmon-leap. Dalkey means "thorn-island" in Danish, the more ancient Irish name being Delginis, from *delg*, "a thorn," and *inis*, "island."

Anyone who wishes to pursue this subject will find the fullest information in a learned work on the "Origin and History of Irish Names of Places," by P. W. Joyce, LL.D., Univ. Dubl., M.R.I.A. To this fascinating work I am indebted for most of the foregoing derivations.

The Celtic *cúm* [coom], a hollow, is reproduced in the name of one of the oldest parts of Dublin, the Coombe, which is in reality the hollow or valley of the Poddle River, a tributary of the Liffey on the south, just as the Bradoge is on the north. This word means "little gorge," and is the name of a little stream which flows by Grangegorman and reaches the Liffey not far from the Four Courts on the northern line of quays.

In the spring of the present year it was my happiness, accompanied by my wife, to travel through the south and south-west of Ireland, from Waterford to Lahinch and Lisdoonvarna, in Co. Clare. The most ample facilities for transit by rail, and road, and water now exist, and the serious hindrance to travel which inadequate and uncomfortable hotel accommodation presented in bygone days is fast being removed. The Southern Hotels in Kerry and the Golf-Links Hotel at Lahinch, on Liscannor Bay in Clare, leave nothing to be desired in respect to site, accommodation, and moderation in charges.

I cannot do better than briefly describe our route, which was skilfully mapped out for us by Mr. Robert G. Colhoun, the courteous and able officer of the Great Southern and Western Railway company.

Travelling over the Great Southern and Western, and Waterford and Central Ireland, and Kilkenny Junction Railways from Kingsbridge to Waterford, we visited that ancient city which is still called the "*Urbs Intacta*." A splendid waterway, formed by the confluence of three fine rivers—the Suir, the Nore, and the Barrow—leads from Waterford to the sea. Opposite to the low spit of land which terminates at Hook Head nestles the charming little watering-place of Dunmore East. It may be reached by steamer from Waterford or by road from Tramore.

This latter place stands on a steep declivity at the western extremity of Tramore Bay. Along the sea-front stretches for some three miles the famous "*silver strand*." Tramore is connected with Waterford by a railway about nine miles in length.

From Waterford we travelled to Lismore by the Waterford, Dungarvan, and Lismore Railway. The line is throughout most picturesque. At first it runs along the southern bank of the River Suir. It then passes through and indeed over the foot hills of the Comeragh Mountains, which rise to 2,500 feet some five miles N.W. of Kilmacthomas. From this place the line descends rapidly to Dungarvan, prettily situated on the shores of Dungarvan Harbour, which is bounded on the S. by the bold promontory of Kelvick Head. Nothing can surpass the beauty of Lismore and the whole valley of the Blackwater. North of the valley and facing Lismore Castle, the lordly mansion of the Duke of Devonshire, are the Knockmeledown Mountains culminating in a peak 2,609 feet high—the "*Hill of a Thousand Hills*," for such is the meaning of "*Knockmeledown*." From Lismore to Youghal there are two routes—to Cappoquin by rail or road, and thence by river steamer, or by road direct. Both routes are beautiful.

Youghal is a quaint old place, celebrated as the home of Sir Walter Raleigh. From it the Great Southern and Western Railway carries the traveller to Cork. The many attractions of this city, the capital of Munster, and of its neighbourhood, are

too well known to need description. The beauty of Queenstown and of Cork Harbour is proverbial.

The Cork, Bandon, and South Coast Railway carried us from Cork to Bantry, passing Bandon on the way. The railway descends to the sea level at Bantry by a steep incline, from which lovely views of Bantry Bay are obtained. The drive of eleven miles from the town of Bantry to Glengarriff is along the shores of the Bay for the most part. It is tame when compared with the magnificent drive from Glengarriff to Kenmare. The road, which is a wonderful piece of engineering, ascends to more than 1,000 feet above the sea. From this height one looks upon Bantry Bay, with its countless islands, its wooded shores, and its overhanging mountains. Kenmare may also be reached by rail from Headford Junction, on the Great Southern and Western line from Mallow to Killarney and Tralee.

The scenery of the Kenmare River, as the great fjord is called which extends thirty miles from the "Head of the Sea" (for such is the meaning of the name "Kenmare") to the Atlantic Ocean, is rarely equalled—never surpassed. The drive by coach to Parknasilla, and thence by Sneem, Derrynane, and Waterville, to Cahirciveen, is delightful in fine weather. The eyes are literally feasted with the ever-changing panorama of hill and valley, woodland, moor, sea, and island. The least interesting part of this coach-drive of forty-six and a half miles is the stage between Waterville and Cahirciveen, but this is likely soon to be bridged over by an extension of the Great Southern and Western Railway. The Cahirciveen branch of this great system runs down to Valentia Harbour, whence the traveller crosses to Valentia Island by ferry boat. The views of and from Valentia are strikingly beautiful. In order to see everything to advantage, a car should be chartered at Knightstown, the chief town in the island. There is much of interest to be seen. Glenleadem, the demesne of Sir Maurice Fitzgerald, the Knight of Kerry, the wonderful slate quarries and the caves which have been formed therein, Bray Head and its beetling cliffs overhanging the majestic Atlantic, and the beautifully-named village of Clynacartan on the southern sound—are all well worth a visit. The offices of the Transatlantic Telegraph Company at Knightstown should also be inspected.

From Cahirciveen the visitor is carried back by rail to either Tralee or Killarney. The route is extremely picturesque. After leaving Cahirciveen the line rises several hundred feet to a mountain station called Kells—on one side stands Knocknadob, 2,266 feet; on the other, Coomacarrea, 2,542 feet. A steep incline thence carries the line on to the southern shore of Dingle Bay, another of the Kerry fjords. The train passes through the beautiful valley of Glenbeigh and skirts Caragh Lake, from which there is a magnificent view of Carran Tual, the highest mountain in Ireland (3,414 feet), and the precipitous range of the M'Gillicuddy's Reeks.

From Tralee we travelled to Limerick *via* Listowel and Newcastle by the Waterford and Limerick and Western Railway. At Listowel one of the most curious railways in existence has its terminus. The line runs to Ballybunion at the mouth of the Shannon. It is constructed on the Lartigue principle of a single elevated rail.

Limerick, the "City of the Violated Treaty," presents many features of interest to the visitor—King John's Castle, St. Mary's Cathedral, the Treaty Stone, and, above all, the broad waters of the Shannon. From the city there are two routes to the coast of Clare and its watering-places. One is by water, a steamer leaving almost daily for Kilrush, which is nine miles by rail from Kilkee. The other route is by rail to Ennis, and thence by the narrow-gauge West Clare Railway to Lahinch, Miltown Malbay, and Kilkee. The last-named favourite seaside resort is very bracing—the neighbouring cliffs are famed for their grandeur, and the sea-bathing is excellent. Lahinch stands near the S.W. extremity of Liscannor Bay. It is noted for its golf-links, and in connection with these, the Golf-Links Hotel is all that can be desired in respect of site, equipment, and cuisine.

From Lahinch a most enjoyable drive is by Liscannor to the stupendous Cliffs of Moher, which tower to a height of 600 feet above the Atlantic, and thence to Lisdoonvarna, famous for its sulphur and chalybeate springs. Splendid views of the Arran Islands, Galway Bay, and the mountain ranges of Galway and Connemara are commanded by the road running from the Cliffs of Moher to Lisdoonvarna. The drive may fitly end at Ennisty-

mon, where there is a fine cascade on the Inagh River. It is a station on the West Clare Railway, so that the return journey to Dublin is easy *viâ* Ennis, Limerick, and Limerick Junction to Kingsbridge, or *viâ* Ennis and Athenry to Broadstone, Dublin, over the Waterford and Limerick and Western Railway, and the Midland Great Western Railway.

In a delightful little book but lately published, and well-named "The Sunny Side of Ireland," the author, Mr. John O'Mahony, thus describes the beautiful country the traveller passes through over the system of the Great Southern and Western Railway:—

"A beautiful country it truly is, be it approached from Athlone, its north-western gate, by the Shannon, where

"In the quiet watered land, the land of roses,  
Stands Saint Keiran's city fair,'"

or from its south-western side, in the kingdom of Kerry, where the ocean leans against the mountains, and the storm-swept peak of Skellig Michael makes the most westerly citadel of Christ in the Old World! Everywhere within its broad borders, swift-rushing rivers, mirror-like lakes, and mountains tiaraed in the skies, delight the vision and gladden the heart."

Through the north-west, north, and north-east of Ireland, equally attractive tours are possible. That which I have attempted briefly to describe occupied exactly ten days. It was health-giving, enjoyable, and instructive, and impressed us with the wealth of scenic beauty which lies at our very doors—alas! too much neglected in the past.

May I express a patriotic hope that the dawn of a happier day for our dear native land is already breaking, for

"— Look, the morn, in russet mantle clad,  
Walks o'er the dew of yon high eastern hill"—

and that soon the tide of popular favour will bear many a visitor to our emerald shores!



SOME METEOROLOGICAL AND OTHER STATISTICS  
IN CONNECTION WITH THE NATIONAL HOS-  
PITAL FOR CONSUMPTION FOR IRELAND.<sup>1</sup>

BY B. H. STEEDE, M.D., EX. SCH., SEN. MOD., DUBLIN.

*Resident Physician to the Hospital.*

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IN accordance with the President's request, I have much pleasure in giving a summary of meteorological observations taken at Newcastle during the past year and a half, and also a very short account of some of the work done by the hospital.

The building is situated three miles from the sea, on the southern slope of a hill. To the south-west and west, but at a distance of a mile or two, lies a chain of hills seven or eight hundred feet high. The exact height of the site of the hospital itself above sea level is 270 feet.

The hill on which the hospital is situated shelters it from the north, and also, although to a less extent, from the east, while from the southerly aspect both of the site and of the building the full benefit is derived of all possible exposure to the sun.

The soil consists largely of gravel and is therefore very porous, and lends itself readily to a system of drainage. In its deeper parts there are very abundant springs, the water from which finds its way freely through the marly soil, without at any time rising to the surface. This peculiarity of the soil has been taken advantage of in providing a drainage system which has proved very satisfactory. The sewerage from the house is conducted through a closed concrete drain to a closed cesspool, where the solid matters collect, and from which they can be removed when this may become necessary. The overflow from this cesspool, which is entirely liquid, is never allowed to come to the surface of the ground. It is led off by a branching underground drain through the gravel soil, through which it freely percolates in all directions. As the whole system is

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<sup>1</sup> Paper read before the Section of Chemistry and Meteorology at the Congress of the Royal Institute of Public Health (John William Moore, M.D., F.R.C.P.I., President of the Section), August, 1898.

practically closed no effluvia can arise, and as the natural filter in which the refuse water in this way disappears is four or five feet below the surface, it is impossible that the ground should be contaminated.

Treatment of patients is conducted on the usual lines in which open air and a superabundance of nourishment have the chief place, with also moderate exercise, attentions to the functions of the skin, and sufficient rest in bed. Some idea of the results obtained may be got from the following summary of one hundred cases which have passed through the hospital under the care of the visiting physicians, Dr. O'Carroll, Dr. Parsons, and Dr. Coleman. In order that we may be certain that the list includes only cases of phthisis, any case in which the tubercle bacillus was not identified in the sputum is not included, but otherwise the cases are consecutive. The hundred cases have, with the approval of the visiting physicians, been classified as follows :—

Thirteen were very much improved, and afford in many instances a probability of permanent arrest of the disease.

Twenty-eight were much improved, and afford in some instances a probability of permanent arrest.

Thirty-six were improved. All the patients in this class, as well as those in the two preceding classes, gained in weight, improved in general condition, and the disease was more or less checked.

Fifteen remained in much the same condition in which they were admitted, although some of them became somewhat stronger.

Six became worse and

Two died (one from tubercular meningitis, the other from hæmoptysis).

Eighty-four gained weight while in hospital.

This classification has of course been made from a general consideration of the changes observable in the symptoms of each case, but the change in weight is almost the only one of these which can be set forth in figures.

The change in weight calculated from that of all the hundred patients (excluding, of course, the two fatal cases), shows an

average gain in each case of  $7\frac{1}{4}$  lbs. during the patient's stay in hospital.

Eighteen patients gained more than a stone in weight. In two instances the increase in weight was over two stones.

It may be objected that sometimes a patient may gain in weight while at the same time the disease in the lungs is making progress, and no doubt in some instances this may occur for a time, but obviously could not long continue, and the average gain in weight in the cases considered is such as could only be possible with an average improvement in the disease itself. Moreover, this conclusion has been justified otherwise by physical examination.

Our experience, in fact, is in full accordance with the large and rapidly increasing mass of evidence showing the good results derived from the open-air treatment of consumption, not in any special climate, but in every climate. Consumption we know occurs in every variety of climate. That the disease is more prevalent in some countries and districts than in others is explained chiefly by differences in the density of the population and in the habits of the people. After these factors, the next important in determining the spread of the disease seems to be the dampness of the soil. We may take it as proved that the direct effect of climate is of very subordinate importance. Climate has a most important influence on the spread of the disease, but the chief way in which it acts is by affecting the habits of the people, and so we can understand that the unfavourable effects of a bad climate can be counteracted by artificial means, namely, especially by the use of shelters on a rather large scale, which enable the patient to remain as much as possible in the open air, and by a proper system of ventilation, which will ensure his having fresh air at night or while indoors.

And as consumption occurs in all climates, so we might expect that its treatment might be successfully carried out in all climates. The difference lies in this, that in some countries the consumptive will naturally and readily lead an open-air life and adopt habits which tend to check the disease, while in others he cannot do so unless he is removed from unhealthy surroundings and provided with special arrangements by which he can have

the advantage even in cold, wet, or windy weather, generally of the open air, and always of fresh air.

Hence the necessity for the establishment of sanatoria for consumptives, and especially for those of the poorer class who cannot otherwise be afforded a chance of recovery, and who, remaining in their own homes, are a source of danger to their relatives and friends.

But such sanatoria do much more than benefit the patients who may be admitted. They also teach in the most practical way how consumption may be prevented. I should like to emphasise this point, and would quote a paragraph in this connection from the last report of the Newcastle Hospital. Having conclusively shown that the patients were very decidedly benefited, the report goes on to say: "It would be a great mistake to suppose that here the value of the hospital as a public institution ended. Consumptives, especially of the poorer class, are very liable to spread the disease among the inmates of the houses in which they reside. During their stay in hospital the patients become familiar with the methods adopted to prevent the spread of the disease, and acquire habits which, if they were more universally followed, would do a great deal towards exterminating the disease. By spreading this knowledge, and by making these habits more common, the hospital confers a public benefit which is very liable to be overlooked."

During the day each patient is provided with one of Dettweiler's expectoration flasks, which are not only necessary but very convenient. At night an ordinary expectoration cup is used. The expectoration is collected morning and evening, and completely burned in the engine furnace, and the vessels thoroughly disinfected. One of the strictest regulations of the hospital is that the patients, whether they are out of doors or in the house, expectorate only into the vessels provided for the purpose. Many patients on leaving hospital purchase one of the expectoration flasks, in order that they may continue to take the same precautions with regard to the management of the sputum in their own homes, but unfortunately these pocket flasks are rather expensive. An efficient substitute might be found in paper handkerchiefs, which might be destroyed immediately after use.

I am sorry, Mr. President and gentlemen, that I have not

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time to refer more particularly to many points, and that the statistics I have to offer you are in some respects rather meagre. In the accompanying table will be found a summary of the meteorological observations taken since January, 1897. Comparing these with the corresponding observations taken in Dublin, the chief point of interest is perhaps the amount of the rainfall, which has been considerably higher at Newcastle, although there have not been so many rainy days. That the number of wet days has been less at Newcastle is, of course, a consideration of some importance.

Additional information with regard to the hospital may be found in its published report, to which I should like to direct the kind attention of the Members of the Congress.

*Abstract of Meteorological Observations taken at the National Hospital for Consumption, Newcastle, co. Wicklow, during the year 1897.*

Month.	Abs. max.	Date.	Abs. min.	Date.	Mean daily max.	Mean daily min.	Rain-fall.	Rainy days (i.e., on which more than '005 fell).	Max. fall in 24 hrs.	Date.	Prevalent Winds.
January..	47°0	7th	25°8	24th	Deg. 41°4	Deg. 33°6	Inch 3'876	Days. 20	Inch '560	5th	N.W., S.E.
February	56°4	25th	33°4	1st	49°6	39°9	1'718	16	'281	4th	S.W., S.E.
March..	59°1	21st	28°9	30th	49°8	38°3	4'490	23	1'017	2nd	W., S.W.
April ....	58°8	17th	30°1	2nd	49°9	39°1	3'406	19	'690	5th	E., S.W.
May .....	62°3	16th	35°9	4th	56°1	42°3	'802	11	'188	30th	N.W., N.E.
June .....	73°8	26th	40°0	2nd	64°5	50°4	4'078	16	1'020	8th	E., N.W.
July .....	77°0	16th	42°5	11th	69°0	50°2	1'425	11	'297	18th	W., E., N.W.
August ..	76°0	4th	45°0	27th 29th 30th	68°0	49°4	5'328	20	'809	29th	S., S.W., W.
September	68°8	14th	41°0	3rd	61°4	44°7	3'166	11	2'308	1st	N.W., W., S.W.
October ..	62°0	2nd	40°0	13th	57°1	46°2	3'175	13	'970	14th	E., S.E., W.
November	58°0	8th	34°0	16th	51°9	42°9	4'864	15	1'950	13th	W., S.W., S.E.
December	55°4	7th	33°0	3rd	48°4	39°7	8'865	20	'492	15th	S.W.
Extremes, totals, and means....	77°0	July 16th	25°8	Jan. 24th	55°6	43°0	40°193	195	2'308	Sept. 1st	W.
					49·3						

*Abstract of Meteorological Observations taken at the Hospital, Newcastle, co. Wicklow, during the first six months of the year 1898.*

Month.	Abs. max.	Date.	Abs. min.	Date.	Mean daily max.	Mean daily min.	Rainfall	Rainy days (on which more than '005 fell).	Max. fall in 24 hours	Date.	Prevalent winds	Mean daily humidity.
January .....	Deg. 58°8	30th	Deg. 34°0	10th	Deg. 50°2	Deg. 43°0	Inches. 2'316	Days. 9	Inches. —	—	—	Per cent 84°0
February .....	57°0	1st	27°0	21st	47°4	36°8	1'607	18	—	—	—	79°5
March .....	59°0	18th	31°2	9th	47°0	36°6	'844	13	'148	6th	Same as at Dublin.	76°5
April .....	61°0	7th	32°8	5th	52°8	41°0	4'441	15	1'270	30th	—	82°1
May .....	64°0	8th	35°2	16th	55°5	43°4	3'251	19	—	—	—	81°0
June .....	73°0	17th	41°0	2nd & 3rd	60°3	46°9	2'459	14	1'230	5th	—	78°5
Extremes, totals, and means	73°0	June 17th	27°0	Feb. 21st	52°2	41°3	14°918	83	—	—	—	80°3

VALENCIA AS A HEALTH RESORT.<sup>1</sup>

BY PATRICK LETTERS, M.D., D.P.H.

UP to the present Valencia Island has not attracted that attention as a health resort, to which, in my opinion, both its climate and the natural beauty of its situation and surroundings entitle it.

Geographically it is very nearly the most westerly point of European land. It is bathed by water which still retains some of the heat imparted to it in tropical seas, and its atmosphere is as pure as that of the ocean which encircles it. The channel separating Valentia from the mainland is irregularly semi-circular in shape, and nearly ten miles round from its double ocean inlet at the north-east to its outlet at Bray Head on the south-west. The ferry at Knightstown is under half-a-mile across, but at a little distance south it widens to a mile and a half. The island of Beginish, which occupies the harbour north of Knightstown, is becoming somewhat frequented during the summer months on account of the facilities which its fine sandy beach affords for picnic parties, golfing and bathing. Valencia itself is about seven miles long, with an average width of two miles. An elevated ridge runs through the long axis of the island, close to its Atlantic border, varying in height from 200 to 300 feet, but rising abruptly at each end to about 800 feet.

From this high ground the surface slopes to sea-level all along the southern side of the island, which faces the mainland. The whole west coast-line from the lighthouse to Bray Head is rock-bound and exposed to the open Atlantic. In the western part of the island there is a considerable patch of bog, which the inhabitants use for fuel. In the vicinity of Knightstown this has been largely cut away, leaving only about a foot or eighteen inches of peaty surface mould. This rests on a sub-soil of clay, or a mixture of clay and rubble, some ten or twelve feet thick, and

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<sup>1</sup> Paper read before the Section of Chemistry and Meteorology at the Congress of the Royal Institute of Public Health (President, John William Moore, M.D., F.R.C.P.I.), August, 1898.

beneath this is the solid rock. A boring in search of water has recently been made into this, which was found at a depth of about twenty-four feet from the surface. Its quality, however, was objectionable, owing to impregnation with iron and a strong odour of sulphuretted hydrogen. In the hope of reaching a purer supply at a greater depth, the operations were continued to a depth of ninety feet, through exceedingly hard rock of various shades of slate colour. On shutting off the supply first obtained by piping the bore-hole to the necessary depth, it was found that a much purer water was obtained, and that the supply was inexhaustible.

Analysis still reveals the presence of iron, but not in sufficient quantity to condemn the water for domestic use. Valencia waters generally are soft, free from animal pollution, slightly impregnated with vegetable matter, and almost free from lime. Most samples show what elsewhere would be regarded as a suspicious amount of chlorine—4·7 to 5·2 parts per 100,000—but the source of this is spray of the ocean. All the shallow wells and springs yield a water giving about 5° of hardness. The water from the boring is, for a deep supply, also a soft water, its hardness amounting to 11° only.

To those taking up residence in Valencia there is a choice of three available sources of water supply—(1) The rainfall, which, when filtered through sand, is unobjectionable, and, of course, beautifully soft; (2) shallow wells which can be dug and springs which can be tapped anywhere, and which yield excellent water if their sources of supply be protected; and (3) the rock water, which, though containing a trace of iron, is otherwise a good potable water.

For the meteorological figures by which I mean to point out the salubrity of Valencia I have to express my indebtedness to the labours of Mr. J. E. Cullum, F.R. Met. Soc. He has worked out results from the records of the Valencia Observatory, covering nearly a quarter of a century. During a twenty-three years period—1869 to 1891—the mean annual temperature of Valencia was found to be 51°. The highest figure for any single year occurred in 1869, when 52·3° was recorded, and the lowest mean annual temperature, 49·2°, occurred ten years later, in 1879. The total range was, therefore, only one point over 3°. Turning to the

mean monthly temperatures over the same extended period, we find shade heat throughout the year distributed in the following order, commencing with August, our warmest month :—August,  $59\cdot2$  ; July,  $58\cdot7$ ° ; September,  $56\cdot6$ ° ; June,  $56\cdot6$ ° ; May,  $52\cdot1$ ° ; October,  $51\cdot7$ ° ; April,  $48\cdot5$ ° ; November,  $47\cdot8$ ° ; March,  $45\cdot4$ ° ; February,  $45\cdot3$ ° ; January,  $45\cdot2$ ° ; December,  $44\cdot9$ °. These figures afford strong testimony of the equability of the Valencia climate. Between the warmest and the coldest month of the year the difference in mean temperature is only  $14\cdot3$ ° ; and throughout the whole winter—December to March, inclusive—the total range is half a degree only !

It is not easy, in dealing with a climate so markedly insular as that of Valencia, to define the seasons. If we take summer to include that period during which the temperature curve on the chart rises above the mean annual value of  $51$ °, it will be found to cover more than five months, from about April 20 to the early days of October. Spring will then be represented by April only, if we regard March as a winter month, while autumn will include the two months of October and November only. The gradual rising of temperature in March and April, and the falling in October and November are only connecting links between winter and summer, and not distinctly defined seasons.

In determining the claims of a health resort to favour, there is perhaps no single meteorological factor more valuable than the mean hourly temperatures throughout the different months of the year. The health-seeker who comes to Valencia may rest satisfied on this point—that, whether his advent be in the winter or in the summer, in autumn or in spring, he shall not experience any sudden change of temperature from hour to hour, either by night or by day, or from day to night. Let us look to figures for verification of this statement, figures which cover the respectable stretch of twenty years—1871 to 1890. The hour of greatest heat throughout the year is 3 p.m., although during autumn and early winter 2 p.m. is slightly warmer. The coldest hours vary between 4 a.m. and 8 a.m. If we examine the four winter months, it comes out that the greatest heat in a December afternoon is  $46\cdot6$ °, and the greatest cold on a December morning is  $44\cdot2$ °. Similarly for January the figures are  $46\cdot6$ ° and  $44\cdot6$ °, for February  $47\cdot2$ ° and



44°0', and for March 48°5' and 43°4'. What do these accurately elaborated statistical figures prove? They show that in Valencia the total range of hourly temperatures in December is under 2½°, in January only 2°, in February 3½°, and in March 5½°. In the treatment of bronchitic and pulmonary affections it is often a problem where to find a local climate free from any liability to sudden changes of temperature. Valencia fulfils this requirement, and upon incontrovertible testimony. In many localities direct window ventilation of bedrooms during the hours of sleep, though desirable, cannot be employed, perhaps on account of a rapidly falling temperature, or because of atmospheric impurities. Neither of these objections can operate in Valencia, where, with a high degree of atmospheric purity, changes of temperature never occur in a way nor to a degree to be prejudicial.

The only difficulty in the matter of carrying out window ventilation of bedrooms during the night in Valencia is the discomfort, or supposed discomfort, attending the velocity of the wind. It is not a real danger, on account of the purity and the temperature of the entering air. The remedy is to diminish the aperture of entrance; but it should also be within the power of mechanical skill to devise means to break the force of the wind when that is necessary without interfering with its effective distribution in the room. During the warmest months of the year the differences between afternoon and early morning temperatures are greater than in winter, but do not exceed 7° in any month. When we remember that the mean temperature of the warmest month is under 60°, we have as the constant accompaniment of our summer nights as well as our summer days a delightful coolness, which, apart from its therapeutic advantage in many cases, should render Valencia a very desirable summer resort.

The variability of diurnal temperatures, or the difference between the temperatures of successive days, has been determined from records extending over fifteen years. The method adopted was to extract the differences between the successive daily means, irrespective of sign, and then to take the average of the figures so obtained for each month. The result was that for six months of the year the variability exceeded 1°, and for the other six

months  $2^{\circ}$ . The variability of diurnal temperature the whole year through was found to be only  $1.9^{\circ}$ . Can anything speak more eloquently of the equability of the climate of Valencia? On account of the time limit attaching to these papers, I must touch very briefly on the other meteorological features of Valencia.

The mean annual rainfall for the twenty-three years, 1869—1891, was 57.7 inches. The wettest year of the period yielded 68.6 inches, and the driest 43.7 inches. The distribution of the rainfall throughout the year shows it to be heaviest from October to March, and lightest from April to June. The wettest month is January, which gives 6.50 inches; the driest in May, which records 3.36 inches. This rainfall is well above the average, although not the heaviest in Ireland. I believe it to exert a beneficial effect on the climate by the removal of floating organic and inorganic particles from the air, and otherwise it is not deleterious on account of the ease with which it reaches the sea, owing to the configuration of the surface. The number of days upon which a measurable amount of rain falls varies from 16 in May and June to 23 in January and December.

Rain falls in Valencia with the greatest frequency and also in the greatest quantity in the early morning hours, 4 a.m. to 6 a.m. Snow, it may be believed, is an exceedingly rare occurrence in Valencia, and when it falls it melts quickly. Many years may elapse without the least sign of snow.

Sunshine has been recorded for ten years. The amount found for the whole year is 33.8 per cent. of the total amount possible. In December 46 hours of sunshine may be depended upon. This increases in the other months until the very sunny months of May and June are reached, in both of which from 200 to 230 hours of sunshine may be expected.

Regarding the effect of the climate on the health of the native population, it is worthy of note that tubercular disease of the lungs is almost unknown. Some half-dozen cases have come under my observation within as many years; but some had not originated in Valencia, and others were due to causes which operated independently of climate. Bronchitis and other non-tubercular diseases of the respiratory system are decidedly rare

in Valencia. A genuine case of spasmodic asthma I have not seen, and it is within my knowledge that a distressing case of hay fever has been cured by residence in the island. Zymotic diseases, when they appear in Valencia, invariably come from without. I have had to deal occasionally with diphtheria, scarlet fever, typhoid, whooping cough, and measles, and in every instance, with the exception of one mild case of typhoid, was able to trace conclusively that the first cases had been imported. The epidemic of measles at the end of last year produced a good deal of suffering and some fourteen deaths. It gained a footing of epidemicity, because the island had not been visited by it for a great many years, and also because the first case unfortunately escaped recognition. The community is now so well protected against this zymotic that there is no fear of its reappearance for years to come, when perhaps rural sanitary authorities shall have acquired a better aptitude for dealing with this hitherto rather unmanageable disease. Rheumatic affections are rare. Deaths are registered from old age very frequently. Some time ago this attracted the attention of the Registrar-General, who referred to the matter in one of his quarterly returns. In concluding this brief and necessarily incomplete account of Valencia as a health resort, I must add that the place is as yet deficient in many of the accessories which go to form the ideal health resort. Its great claims to consideration are a remarkably equable climate and a very beautiful situation. Social advantages do not exist to any extent. The available recreations are fishing, boating, and limited driving.

For those whose only object is the preservation of health, or the restoration of health, and who can endure solitude for the sake of the peace and quietness which accompany it, Valencia is suitable. For those who, in the midst of their infirmities and afflictions, look for their ordinary round of social pleasures and amusements, Valencia is not yet suitable. That the place has a future before it is not to be doubted, but on account of its remote situation, its unknown advantages, and its undeveloped state, some time must elapse before it takes its proper place as a health resort. A commencement has been made in the line of improvement by the enterprising proprietor of the Valencia Hotel.

This establishment is presently undergoing extensive alterations, which, when completed, will put it in line with the best establishments of the kind in the south-west of Ireland. A novel feature of these improvements will be the introduction of hot and cold sea-water baths. The village of Knightstown presently affords some modest private accommodation, which will shortly be increased by the erection of additional houses in the village, and also by detached houses at a short distance away. The chief want at the present moment is some small villa residences, built upon a hygienic plan, and with ample curtilage. Magnificent sites exist in abundance. The local landlord is Sir Maurice Fitzgerald, Bart., Knight of Kerry.

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#### CLIMATE AND HEART DISEASE.

BY ALFRED HAVILAND, M.R.C.S.ENG.

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IN the admirable and instructive address of Dr. Samuel Hyde, with which he opened the discussion on "The Treatment of Cardiac Disease by Baths, Exercises and Climate," on the 26th of January last, the author dwelt upon *the climatic factor*, and treated this part of his subject with an emphasis sufficient to show that he believed climate to be a powerful factor in the treatment of cardiac failure. Throughout the discussion that followed, however, climate was barely mentioned and not once discussed. Dr. Ewart "would have liked to have dwelt upon climate in heart disease as well as upon the effect of baths, questions which belong to the scope of the Society and of the paper, but in view of the number of expected contributions to the discussion he would not further trespass upon the patience of the Fellows." Dr. Sansom referred more to a change of surroundings than to one of climate. Dr. Heron, in his few straightforward practical remarks, showed at once how he appreciated the value of climate

by expressing his belief that there could be no doubt "that two of the most potent helpers in the treatment of most diseases, were *sunshine* and *fresh air*," the two elements in climate which I shall show are most destructive of the *materies morbi*, which is at the root of the cardiac disease that dominates the death-rates in England, under the heading "Diseases of the Circulatory System." Dr. Myrtle tells us he has no experience of the influence of climate, except that the late mild winter made the lives of his heart-cases more comfortable. What I have just written is the sum of the notice taken of the last of the three subjects, *baths*, *exercises*, and *climate*, in the treatment of cardiac disease.

Under these circumstances I venture to lay before the Fellows of this Society a brief account of what has been done towards working out some of the problems presented to me whilst engaged in the study of the "Medical Geography of Heart Disease in England and Wales," because I believe that the facts brought to light during my investigations, when once thoroughly mastered, will give us the clue to the unravelling not only of some of the mysteries of climate, but help the medical practitioner in the selection of localities calculated to benefit his patient during convalescence, or as permanent residences. The map that I constructed in 1868, and which illustrated my paper on the "Geographical Distribution of Heart Disease in England and Wales," read before the Medical Society of London, was based upon Dr. W. Farr's statistics in his Supplementary Report, addressed to Major Graham, the Registrar-General, for the ten years 1851-1860. In that classical supplement, the first of its kind ever published, there were attributed to "*Heart Disease and Dropsy*," among a mean *male* population of 9,278,742—109,527 deaths; and among a mean *female* population of 9,718,174—127,446 deaths from the above specified causes; in other words, a total of two hundred and thirty-six thousand, nine hundred and seventy-three deaths, was registered during the said ten years in a mean population of eighteen million, nine hundred and ninety-six thousand, nine hundred and sixteen; a period of time, and a number of deaths, therefore, sufficient for our purpose and sufficient to command our deepest attention. These large figures

I first of all apportioned among the 11 registration divisions, and then among the 53 counties, and lastly among the 630 registration districts with the following results : Taking the mean death-rate for the two sexes at all ages to every 10,000 living at 12·4 (males being 11·8, and females 13·1), I constructed a map on which each of the registration districts was so coloured in different shades of blue and red as to represent whether the death-rates were above or below the average for the whole country. All districts *above* 12·4 were coloured *blue* in different shades, and all *below* in different shades of *red*, the highest mortality being represented by the darkest *blue*, and the lowest by the darkest *red*. On looking at a map so coloured, one at once perceives where heart disease was most fatal during the ten years, 1851-1860, and on the other hand where it was least so ; moreover, the eye is at once struck with the well defined areas of the high and low mortality groups. We will follow the former throughout England. In the first place, we see the great northern group of blue districts, in the form of a Greek sigma ( $\Sigma$ ), comprising the mountainous and valley districts of the North and West Ridings of Yorkshire, Westmorland, Cumberland, and Northumberland. More south and in the centre of England is the group of Staffordshire and Derbyshire. South-west of this group is a triangular one embracing the counties of Brecon and Hereford ; and still further to the south, south-west and south-east is the large high mortality area embracing Devonshire, Dorsetshire, Wiltshire, Hampshire and Sussex. It was shown that whilst *high* mortality invariably was found in inland districts, where the valley systems and the courses of the rivers were not in the line of direction of the prevailing winds, where in fact thorough ventilation of them was impossible, on the other hand, all the *low* mortality districts affected the coast-lines where there were low foreshores, and not precipitous cliffs, where in fact the sea-winds had unobstructed access to their valley systems, where air flushing was admissible to the fullest extent up the estuaries of large rivers, such as the Thames, Severn, &c., and other inlets around the coast, and up the smaller water-courses, which facilitated the penetration of the interior by the prevailing winds. Having treated this subject fully in both the

first and second editions of my work on the "Geographical Distribution of Diseases in Great Britain,"<sup>1</sup> and also in Professor T. Clifford Allbutt's "System of Medicine,"<sup>2</sup> the above outline sketch must suffice as an introduction to what I wish briefly to say with regard to climate and heart disease.

We have to deal with climate in this instance from two points of view in response to the two questions that suggest themselves to us on attentively studying the map I have just sketched. In the first place, the grouping of the high and low mortality districts are too defined to be the result of accident; in the second, the *high* mortality set of groups are all more or less characterised by certain physical features, which are in marked contrast to those with which the *low* mortality groups are endowed; and are sufficient to bring about differences in their local climate when compared with each other. We have already referred to these contrasts, but to render my meaning a little more intelligible I will give a few typical instances. Devonshire is a county of great fertility and beauty, the latter being principally due to its deep and shut in valleys, which are surrounded by heights that are barriers to thorough air-flushing. Out of the twenty registration districts into which this county is divided, during 1851-60, there were only three that had a mortality from heart disease *below* the average—Barnstaple, Tavistock and Holsworthy. Now, if we take the two central and most shut in districts, South Molton and Crediton, we find that they had a death-rate equal to 19.2 and 18.6 respectively, which would according to the map scale (13.0 being the average) entitle them to be coloured the *darkest blue*, the symbol of the highest mortality. Again, in the shut in valleys of Dorsetshire we find the same high death-rates prevailing as in Beaminster and Dorchester; in Wilts too, in Alderbury, Wilton and Tisbury; and lastly, in Hampshire we get Andover (20.4). Here I must close my list which might be, however, extended right through the centre of England to the Lake district and Northumberland, each district repeating the same tale that I have just shortly told. On the other hand, the map tells us the significant story of the low mortality districts;

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<sup>1</sup> Sonnenschein & Co.

<sup>2</sup> Macmillan, vol. i., pp. 46-54.

let us follow the coasts of England and Wales, and note where there are low fore-shores and the wide estuaries of the principal rivers, for we shall find them skirted by *low* mortality districts indicated by *red* in its three shades, which will enable us to trace them in some cases far inland, where the fore-shores are low and the obstruction to free air-flushing by the prevailing and coastal winds is at its minimum : whereas along the south coast, where the fore-shores are precipitous and obstructive, and the river courses are athwart the trend of the prevailing winds, *high* mortality is the rule.

After I had constructed the map of heart disease and read a paper upon it before the Medical Society of London during the winter of 1868, I visited a large number of the highest mortality districts and, fortunately, amongst the first in which I carried on my investigations was Andover, where I had the advantage of conferring with my late lamented friend, H. Jabez Elliott, then in large practice in that town. He knew Hampshire and Wiltshire well, for he had patients scattered all over both counties, besides which he was a highly accomplished surgeon and a most observant student in the pursuit of his profession. He fully confirmed my experience that, wherever my map indicated high mortality from heart disease, there was to be found prevalence of rheumatic affections, and that these were associated with certain conditions of soil, configuration of land, atmospheric moisture and deficient air-movement, which combined resulted in the formation of local climates favourable to the development of a *materies morbi*, which accumulated in the low-lying pent-in valleys, where free air-flushing was either impossible or for the most part obstructed ; in such hollows he informed me that he dreaded the convalescence stage of his cases, as rheumatic complications so frequently retarded its progress, and in many instances involved the heart, which had hitherto been free from disease ; this he had especially observed amongst children.

We are thus led to conclude that there are certain climatic conditions, which are not only obnoxious to human beings generally, but which favour the accumulation of certain pathogenic emanations from the soil, the potency of which appears to be intensified amid surroundings that exclude perfect air-flushing,



and promote the robbing of the rays of the sun of their chemical power in their passage through the moisture of the air that fills some of the most beautiful valleys in our country.

With regard to the climate of the low mortality groups the reader will require but a very few words. It will be seen at a glance that they occupy positions that are open to free air-flushing by all winds that blow over our seas. Where the atmosphere in fact cannot be stagnant and over-laden with moisture their climates partake more of the general character of that of the country ; they enjoy their full share of the sun's rays according to latitude and aspect, and therefore it is natural to expect that among these districts are to be found localities best adapted in the treatment of heart disease. Thus we see that climate in relation to heart disease must be studied from two points of view : (1) as a possible causative ; and (2) as a curative agent. In other words, we should avoid certain combinations of land, air and moisture, which we find invariably associated with prevalence of rheumatic affections and high mortality from heart disease ; and select localities where, whatever pathogenic emanations that may arise from the soil, are swept away by the air-flushing of the prevailing and sea winds and not allowed to accumulate as in the "stuffy hollows" described above ; where also the sun's rays can penetrate to the soil without being deprived of their chemical powers by filtering through moist and stagnant air.

After publishing, in 1871, my work on "The Geographical Distribution of Heart Disease," it struck me that some of our English crops would, if their natural history were studied, help us in explaining some of the facts that were shown on the map which illustrated it. At the onset I fixed upon *wheat*, but, after a little consideration, rejected it, for I argued wheat is an expensive seed, and certainly the farmer would not waste it by sowing it where it would not get the full benefit of appropriate aspect and other climatal advantages, and therefore the results would be vitiated by the necessary selection. But after travelling throughout England and Scotland, I entirely changed my mind after well watching the English farmer dispose of his precious seed. It seemed to me that it mattered not where the grain was cast,

north aspects and south aspects were all the same to him. Selection was ignored, in too many instances in consequence of the restrictive clauses in the tenant's lease. Wheat was reinstated, and I took the mean of the estimates of the three following observers:—Mr. Algernon Clarke, 1870; Major Craigie, 1882, twenty years' average; and the *Mark Lane Express* 1882, seven years' average. These estimates for each county were published in the *Times*, October 20, 1883. From these estimates the average wheat yield for England was deduced as  $29\frac{1}{2}$  bushels per acre. The data thus obtained enabled me to construct a map showing the geographical distribution of wheat in England, using a scale of six degrees as in my disease maps thus:—all the counties *above* 29 bushels per acre were coloured *red* in three degrees, and all *below* that standard *blue* in three degrees also. This method at once proclaimed the defaulting counties; and, as I have no space to enter more fully upon the subject, I must content myself with a summary of what I have already written on it. In the first place, I will start with the proposition that the wheat plant is an air and sun-loving one; it rejoices and thrives in open, well ventilated tracts of land, well exposed to the sun and away from the cloud-forming influences of elevated masses, such as hills and mountains, and abruptly precipitous foreshores rising several hundred feet above the sea-level as in the North Riding of Yorkshire, Devonshire, and other parts of England. It is a plant that is intolerant of close, pent-in valleys, where the prevailing winds have not free access, where the moisture of the southerly winds is unduly imprisoned, and where in consequence of this atmospheric moisture, the sun's rays are robbed of much of their ripening power, the fixation of nitrogen and carbon, for instance. In these respects the wheat plant offers a striking contrast to some diseases, such as rheumatism and heart disease. A map of the geographical distribution of these diseases will show the *greatest* amount of mortality from them where the wheat yields the *least* number of bushels per acre, and the *least* amount where the wheat yield is *greatest*. The reason is simple, for the above diseases thrive under conditions that are fatal to the wheat-plant; and the wheat-plant thrives under conditions that are fatal to these diseases. Thus does the study of climate and

physical geography *link* the pursuits of medicine and agriculture. We have noted the *high* mortality from heart disease in the county of deep valleys, Devon, and may now contrast it with the *low* mortality of some of the eastern counties where the sun and wind have full power. In fertile Devon we find that although its mean summer temperature is adequate (62·2), it still fails to produce wheat in greater quantities than 21 bushels per acre; whilst the open, sunny, eastern counties annually yield more than 32. If, however, we travel to North Britain, we shall find there the Scotch farmer, who is a born gardener, chary of his precious grain, only allowing it to be cast over the land that is well aspected, and calculated to receive every ray of the sun and every breath of air, with the result that his crop affords him from 40 to 45 bushels per acre, whilst his English neighbour contents himself with one that rarely exceeds 35.

I may here remark that the death-rates recorded against the above districts under "Diseases of the Circulatory System," during 1881-1890, according to Dr. John Tatham, of the General Register Office, were as follows:—South Molton, 21·5; Crediton, 21·3; Beaminster, 27·0; Alderbury, 22·5; Wilton, 21·3; Tisbury, 23·5; and Andover, 22·7; against England and Wales, 15·8; whilst the counties which they represent had the following low wheat yield averages:—Devon, 20·96; Dorset, 28·79; Wilts, 29·15; Hants, 26·66; and Somerset, 27·88; against 29·52 bushels per acre throughout England for the ten years 1887-96.

Sir William Crookes, F.R.S., in his Presidential Address at the late Meeting at Bristol of the British Association, after expressing his opinion that the time must come when the wheat supply of the world will be inadequate to meet the demand made upon it by the ever-increasing population, and after hinting that the supply of nitrate of soda is not inexhaustible, the President called the chemist to the rescue, to devise methods for converting the nitrogen of the atmosphere into nitric acid by means of electricity, and thus to secure a never-failing manure by which he anticipated the wheat yield would be increased, and the supply made equal to the demand. But manure, however excellent and full of nitrogen, requires a certain climatal environment, to enable the plant to appropriate its elements and fix them in its stem, flag and grain. ●

Medicine has much to learn with regard to climate ; it is much to be regretted that the student's attention is not called earlier to it than obtains in our schools of medicine, and the same may be said of medical geography, to which we are already indebted for much of the new light that has been shed upon our subject—Climate, and Heart Disease.

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### Obituary.

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HENRY LEWIS, M.D., FOLKESTONE.

OUR readers will learn with sincere regret of the death of the first president of the Balneological and Climatological Society, Dr. Henry Lewis, of Folkestone, which occurred on September 5, 1898, at his residence, West Terrace, Folkestone, in the 63rd year of his age.

At a meeting of the Council of the Society, held on the 8th inst. at 20, Hanover Square, London, a vote of condolence was unanimously passed to the widow and family of the late Dr. Lewis. Dr. R. Gifford Bennet, of Buxton, who proposed the resolution, and Dr. R. Fortescue Fox, of Strathpeffer Spa, in seconding the same, spoke feelingly of the high admiration and esteem with which Dr. Lewis was held, and in eulogistic terms of the invariable courtesy and tact which he displayed during the year of his office as President of the Society.

We shall hope to publish in the next issue of the JOURNAL an extended obituary notice from the pen of one of Dr. Lewis's oldest and most valued medical friends.

## Editorials and Notes.

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### THE RECENT SUMMER SEASON.

SO far as the British summer resorts are concerned, the late season has been the best experienced for many years past. From many quarters we have received most encouraging reports. The English, Scotch, and Welsh spas have been especially successful, as also the several spas in Ireland ; whilst the influx of visitors to the many watering places on the coasts of Great Britain and Ireland has been phenomenally large.

This unusual prosperity has been, of course, mainly due to the exceptionally hot weather experienced during the summer months—the abnormally high temperature having rendered life in our large cities and towns almost unbearable during protracted periods of the season, and driven thousands of visitors to seek the pure and fresh air of our inland and coast resorts. Holidays have in many cases been taken earlier in the season than usual, and in others they have been extended considerably beyond their intended limit, whilst in large numbers of instances people have taken two or more holidays, where one has in previous years sufficed.

Other causes, however, have undoubtedly operated to bring about these gratifying results, amongst which may be mentioned the accident to His Royal Highness the Prince of Wales, which had the effect of not only shortening the London season, but probably of causing many members of Society to visit our home spas and climatic stations instead of paying their customary visits to continental resorts.

It may seem unreasonable and even foolish that Society should be influenced to so great an extent, by such a matter as this, but the fact remains that fashion has much to do with the movements of a very large proportion of the community in the selection of resorts, whether in the pursuit of health or pleasure. It has long been the custom for the heir apparent to the English throne to

visit annually one or other of the continental spas, and his example has been followed by many thousands of wealthy members of the community. This year, however, His Royal Highness has been compelled to stay near home, and it would seem that this has had the effect of inducing large numbers of persons to give up their usual continental holiday in favour of a sojourn at one or other of our home resorts.

Whilst regretting, as all must do, the unfortunate accident to His Royal Highness, we cannot but feel gratified that at least one of the beneficial results which has followed the incident has been a large addition to the visitors at British resorts from the higher ranks of society. It is much to be desired that this will not prove merely the indication of an evanescent change of fashion, but the beginning of a period when the attractions and resources of British resorts shall receive wider and more satisfactory recognition amongst that large class which has so long been the chief support of continental spas and watering places.

#### HEALTH RESORTS AND INFECTIOUS DISEASE.

Referring to the risks which are sometimes incurred by visitors to health resorts, Dr. Niven suggested in a recent quarterly report on the health of Manchester, that intending visitors should consult the Registrar General's quarterly return for information as to the deaths from infectious disease in each of the principal watering places of Great Britain, and avoid places where these diseases have recently prevailed. Commenting upon this suggestion our contemporary the *Lancet*, says: "The public of Great Britain still betray an almost criminal slackness as to the sanitary conditions, equipment and administration of the 'Health Resorts' to which each recurring summer the holiday makers betake themselves. What a reform might be brought about in the sanitation of our so-called 'Health Resorts' if, before selecting his annual camping ground, the head of the family were to ask for certain information from the local Medical Officer of Health. If parents will not take these very elementary and easy precautions, they must be prepared at times to pay the penalty of their negligence."

We can fully endorse the views of our contemporary, which will doubtless be noted in the proper quarters. There are some localities in Great Britain and Ireland which claim the designation of "Health Resorts," but where the sanitary conditions are anything but satisfactory. There are also many of the larger and more reputed resorts in this country where much still remains to be done before they attain that perfection of sanitation which they boastfully claim ; but even the *Lancet* will admit that as compared with other towns and rural districts in Great Britain and Ireland, our health resorts have attained a much higher standard of sanitation.

There is, however, one aspect of this question which is often overlooked, and of which we would remind our contemporary ; and that is, the great dangers incurred by health resorts of the importation of infectious disease into their midst. This is a special and very real danger, which is well known to members of the profession practising in such places, and unfortunately, it is one which the local sanitary authorities are powerless, under present conditions, to prevent. Cases scarcely recovered from infectious disease only too frequently journey to health resorts, and put up in hotels and lodging houses when they are not yet entirely free from the risk of spreading infection, the result often being that other cases occur in the same dwelling, and the resources of the local authorities are taxed to the utmost to prevent the disease spreading, and when deaths occur such health resorts have to bear, somewhat unfairly, the discredit attached thereto.

We would strongly appeal to the *Lancet* and other medical contemporaries, to draw the attention of the profession to the obvious remedy for such an evil. If medical men at a distance would insist on absolute immunity from infection before allowing such patients to leave home, we are persuaded that little would be heard of infectious diseases at the better class health resorts. It may be objected that such patients very frequently disregard the injunctions of their medical attendants, and wilfully incur the risk of conveying disease in the way we have indicated. In such cases we would suggest a further proper and effectual remedy. Let the medical attendant, whose advice and remonstrance have been ignored, communicate particulars of the case to the

Medical Officer of Health at the resort to which the patient has journeyed, who could then cause such measures of precaution to be taken as he might deem necessary for the protection of other visitors and residents.

The question is one which seriously affects not only health resorts, but the community at large, and ought to receive immediate and earnest attention.

#### PROGRESS OF THE SOCIETY.

The near approach of another Session of the Balneological and Climatological Society would appear a favourable opportunity for urging its claims upon members of the profession residing at health resorts, and others interested in the subjects of medical balneology and climatology. During the three years of its existence the Society has more than justified the reasons which were adduced at the beginning as excusing the addition of yet one other Society to those already existing in connection with the medical profession.

In his admirable address last year Sir R. Douglas Powell congratulated the Society on the increase of its membership. This rapid rate of increase during the first two years was not maintained last year, but perhaps this was only what might have been expected. There seems to be no reason, however, why the annual addition to the roll of members should not be a substantial one if the present Fellows would endeavour to make known the aims and advantages of the Society amongst their professional acquaintances.

It is, of course, not desirable to push the Society in order merely to obtain a big roll of members. That would be a foolish policy, and would certainly result in serious damage to its usefulness. A glance, however, at the localised list of existing Fellows, which we are able to publish in the present issue, will show that there is very wide scope for extending the membership at many of our health resorts, where there must be numerous medical men whose admission would not only add to its strength, but bring honour to the Society.

If those Fellows who are desirous of promoting the future



prosperity and usefulness of the Society, would endeavour at the outset of the coming session to bring forward the names of eligible candidates for Fellowship, they would contribute in an important degree to the success of the work we have all so much at heart.

ASSOCIATION FOR THE PREVENTION OF CONSUMPTION AND  
OTHER FORMS OF TUBERCULOSIS.

In our last issue we referred to the movement which has resulted in the formation of an organization bearing the above title, and we are glad to find that the movement has taken definite and active form.

The Association, which has just been inaugurated, has issued a statement of its objects, from which we gather the following :—The primary object of the Association is the prevention of tuberculosis, and the Association consists of ordinary and life members, the subscription of ordinary members being 5s. annually, and a donation of five guineas constituting life members. Its methods of procedure are defined as follows :—(1) the education of public opinion and the stimulation of individual initiative by means of (a) a central bureau for the collection and distribution of information as to modes of diffusion of tuberculosis and measures of prevention. (b) The circulation of pamphlets and leaflets setting forth in plain language the results of scientific investigation of the above points. (c) Public lectures by men approved by the Council; addresses at Congresses and other public gatherings. (d) Co-operation with other Societies having for their object the promotion of public health. (e) The co-operation of the public press. (f) The holding of periodical Congresses and the issue of an annual report. (g) The promotion of the establishment on a self-supporting basis of open-air sanatoria for tuberculous patients. (2) The influencing of Parliament, County Councils, Boards of Guardians, and other public authorities on matters relating to the prevention of tuberculosis.

Our readers who may be interested in the work of this new Society, can obtain further information from the Honorary Secretary, Dr. St. Clair Thomson, 20, Hanover Square, London, W.

THE INFLUENCE OF ALTITUDE CLIMATE ON UTERINE  
HÆMORRHAGE.

A very interesting question in Climato-Therapy was raised in an article contributed to this Journal, in January last, by Dr. Septimus Sunderland, on "Uterine Hæmorrhage as affected by the Climate of Altitudes." In this article Dr. Sunderland gave several cases of severe menorrhagia, which had come under his observation, that had been distinctly benefited by residence at high altitudes, although in most instances the relief obtained was only transitory, and the menorrhagia returned on resuming residence at a lower altitude. The information available upon this subject is of the most meagre description, as there does not appear to be any recorded statement of the usual effects of high altitude climates on chronic uterine hæmorrhage.

That climate does exercise a powerful influence upon the menstrual function will be generally admitted, but whether altitude climates possess the power of exercising a retarding influence in menorrhagic conditions generally is not established. Dr. Sunderland is of opinion that in cases of uterine hæmorrhage associated with anæmia, benefit might be expected by sending such patients to altitude health resorts. He points out that the number of red corpuscles and the amount of hæmoglobin are considerably increased shortly after arriving at an elevated region, and refers to the experiments of Paul Bert, which proved that the blood of animals living in high altitudes absorbs more oxygen than that of animals living at ordinary elevations.

The question arises whether the alleged hæmostatic effects of the climate of altitudes are due to the difference of barometric pressure, or to difference of temperature. Upon this subject Dr. Sunderland remarks: "In seeking for a rational explanation of the causes of the lessened menstruation in the cases I relate, it must be conceded that a low temperature was certainly one important factor in diminishing the amount of the menstrual flow. I have frequently noticed that many women menstruate less in winter than in summer, and we know that 'some English women of feeble development menstruate in summer only and others too freely in hot countries, though not at home' (Robert

Barnes), while some menstruate in hot countries and not in England. And since the temperature falls in ascending mountains about one degree Fahrenheit for every three hundred feet (with certain exceptions in connection with situation, shelter, &c.), I consider that it is certainly worth while trying such elevations in our own country for many patients who cannot bear much expense and do not care for exile to more elevated localities abroad—especially for those who habitually reside in moist, relaxing and low-lying neighbourhoods. These moderate elevations would be also worth trying for numerous nervous and excitable patients, who cannot reside at a very high spot without suffering from distressing nervous symptoms. In selecting such a place in Great Britain, an elevated region with a low mean temperature should be chosen, where the air is as free from moisture as possible and the soil well drained and dry; for in addition to a low temperature as factor in the diminution of the flow in the cases I have related, one must conclude that the dry tonic bracing climate had a beneficial effect by improving the general condition of the patients."

We think that Dr. Sunderland is wise, in the present state of our knowledge, in crediting the improvement more to the lower temperature and greater tonic and bracing influences of high altitude climates, as compared to those at lower levels, than to the influence of lowered atmospheric pressure. The subject is a very important one, and we should be glad if medical men practising at the various climatic resorts (high and low) would make careful observations of the effects of change of climate at their own particular resorts, in such cases.

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### Reviews and Notices of Books.

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ON THE STUDY OF THE HAND FOR INDICATIONS OF LOCAL AND GENERAL DISEASE. By Edward Blake, M.D. London: Henry J. Glaisher. Price 2s. 6d.

This monograph belongs to a class with which we are not very familiar in this country. The object seems to be to ascertain how much information can be extracted from a careful study of one particular member of the body. This object is doubtless of considerable interest, but its attractions are for the curious rather than for the practical physician. From a scientific standpoint this method of approaching disease can hardly be called satisfactory. No one in search of a diagnosis would be satisfied with an examination of the hand only, and even when it seems to be the chief seat of disease, the indications which it offers are not often of sufficient importance to merit separate treatment.

The exhaustive study of the hand would comprise diseases of the skin, including the exanthemata, it would notice a very large proportion of the affections of the central and peripheral nervous systems, and would deal with many aspects of the diseases, medical and surgical, of bones, joints and muscles. The ground which would thus have to be covered would be enormous. As a matter of fact, this little book specifically excludes many matters on which the reader would naturally look to it for guidance. For instance, at page 37 we find:—

“It is scarcely needful to say that invaluable evidence of present or past lesion of cerebro-spinal origin may be derived from a study of the hand. This branch of the subject has, however, already received such careful and complete consideration at the hands of competent writers that it is needless here to do more than refer the reader to certain valuable monographs, more especially to a paper by Francis Larner, ‘On postures of the Hand in Brain Disease,’ and to one by Long Fox, ‘On the Hand as a Diagnostic Factor in Diseases of the Nervous System.’” One of the more serious of the petty annoyances of life is, on consulting a dictionary, to find one’s self referred from one heading to another, and then on to a third. If the busy practitioner is to be referred from one “valuable monograph” to another, which he does not possess, he will very soon have to eschew them, and content himself with such information as is contained in a general text book. In the very next paragraph the author tells us that “Very little has been said of tremor thanus and its clinical significance. It is so large and important a subject that the writer deems it worthy of separate treatment—in a monograph, we presume. In another place we find the following:—“This clubbing of the digital pulp is not to

be confounded with hooking of the nail. Though these may exist together they are quite distinct conditions ; their respective causes and relations require careful working out." This no doubt will form the theme of yet another valuable monograph.

On the whole this book is remarkable rather for what it omits than for what it contains. As far as it goes it is good. It is well written, well printed, and well illustrated. The indexing is unusually full, as is also the bibliography.

**A GEOLOGICAL MODEL OF LONDON AND SUBURBS.** By James B. Jordan, F.G.S. London : Edward Stanford. Price 15s.

Mr. Jordan, the well-known author, in conjunction with the late Mr. W. Topley, of the splendid model, geologically coloured, of the South-east of England and part of France, the inventor of the Glycerine Barometer, and a greatly improved sunshine recorder, has just published a geological model of London and suburbs, to which we have much pleasure in calling the attention of our readers. It represents an area of 320 square miles, with London as a centre, on the useful scale of one inch to one mile. It includes the administrative county of London, and extends beyond the county boundary to Finchley on the north, Croydon on the south, St. Mary Cray and Plumstead on the east, and Twickenham and Harrow on the west. The relation of the geological features of the country to its physical features is plainly seen, and the principal places and roads, the rivers, railways, &c., and prominent heights, given in feet above Ordnance datum, are clearly engraved on the surface ; the vertical scale is one inch to a thousand feet. The geology has been compiled from the maps of the Geological Survey, and shows the superficial deposits as well as the underlying strata. The geology is further illustrated by transverse and vertical sections of the strata and other information engraved on the margin of the frame. The model is made of tinned steel plate, enamelled in colours and embossed to represent the natural undulations. This part of the work was entrusted to Messrs. Huntley, Boorne & Stevens, of Reading, and reflects the highest credit on that firm. The geological colouring is distinct, and, by the aid of a scale of colouring, each of the many strata from the recent "river alluvium" to the upper "chalk with flints" can be easily recognised and remembered. The model enables us to judge of the aspects of different localities, as well as of their geological features, and cannot fail to be of great service to our profession, when consulted as to the selection of appropriate sites for the residence of our patients. Apart from their value as aids to the knowledge of soils, such models facilitate the study of the physical geography of localities, which is of such essential service to the agriculturist ; and we should like to see such models suspended in our schoolrooms, and opportunities given to the rising gene-

ration of making themselves well acquainted with the configuration of their own home surroundings; such early knowledge would be invaluable to all connected with the land. The London School Board have a grand opportunity now of setting a good example in this respect, which, if followed throughout the country, would justify the Government in undertaking the issue of such models, instead of leaving the work to private enterprise. The materials are all at hand and only require to be moulded, as Mr. Jordan has done for London and its suburbs. The time may yet come when landed proprietors shall find it profitable to themselves and tenants, to study their estates by such means, and to learn the difference between good and bad aspects for their cereal crops.

**DEFORMITIES: A TREATISE ON ORTHOPÆDIC SURGERY.** By A. H. Tubby, M.S.Lond., F.R.C.S.Eng. London: Macmillan & Co., Ltd. New York: The Macmillan Co. 1896.

In Mr. Tubby's Treatise on Deformities and Orthopædic Surgery, the profession has been presented with a work of great interest and practical importance. It has long been felt that the rapid advances in this branch of surgery called for the publication of a treatise which would afford the reader a comprehensive and reliable review of the present position of these subjects. In supplying such a want, Mr. Tubby has been peculiarly successful.

The author has divided his work into five sections. In the first, the important subject of spinal deformities is treated in a truly scientific and practical fashion. Section II. deals with deformities of the neck, chest, and upper extremity. Section III. is devoted to a thoughtful and interesting discussion of the various rachitic conditions which lead to so many forms of deformity, especially amongst the poor of our cities and large towns. Section IV. deals with deformities of the lower extremity, whilst Section V. comprises ankylosis, congenital displacements, deformities resulting from cerebral and spinal paralyses and arthrodesis.

The repair of tendons and the interesting pathological questions which the subject involves, is dealt with under the treatment of club-foot, in an admirably exhaustive and scientific manner. In this connection the author has carried out some singularly able experimental researches, which justify him in concluding that perfect regeneration of tendons cannot take place. When repair does take place, he contends that the largest share in the process is due to the plasma cells found in the connective tissue spaces of normal tendon, migrated from the dilated vessels of the inflamed sheath into the surrounding clotted effusion of blood.

Whether our readers will concur altogether with the views of the author in this matter, we are not certain, but it will be admitted that

he discusses the subject in a scientific spirit, and has adduced many cogent reasons in support of the conclusions at which he arrives. Space forbids our noticing at greater length this truly admirable work, which is entitled to a position in the foremost rank of literature dealing with deformities and orthopædic surgery, and ought to find a place in the library of every enlightened medical practitioner. It may be added that the work is well and profusely illustrated, and has been brought out in the usually excellent style for which the publishers are famous.

**THE COLD BATH TREATMENT OF TYPHOID FEVER.** By F. E. Hare, M.D. With Illustrations. London: Macmillan & Co. New York: The Macmillan Co. 1898.

The cold bath treatment of pyrexia has attracted very wide attention in the profession in recent years, and the discussion which followed Dr. Hale White's paper on the Treatment of Pyrexia, delivered before the British Medical Association at Bristol in 1894, showed how widely the treatment by cold baths or cold water packs has been adopted by the profession in this country and in the United States. We therefore welcome this work on the cold bath treatment of typhoid fever, which is the outcome of the practical experience of an enlightened physician, for many years resident at one of the largest populous centres in Australia.

Dr. Hare's position as resident medical officer of the Brisbane General Hospital, which was the first hospital of any size outside Germany and after Lyons, to definitely adopt Brand's system and carry it out systematically in all cases, afforded him peculiar opportunities for studying the practice and results of the treatment. The Brisbane Hospital, on account of immigration and other causes, has a large fever department, and consequently the author has been able to give in the work before us, the results of his personal observation extending over some 2,000 cases of typhoid.

After describing the practical details for carrying out the treatment, Dr. Hare discusses the influence of the bath on the symptoms and complications of the disease, and points out the conditions modifying it. He then goes on to discuss the influence of the treatment upon the duration of the disease, and upon the occurrence of relapses, as well as the influence of the treatment on mortality and prognosis. Lastly, he describes the contra-indications, pointing out the conditions and symptoms requiring modifications in treatment by the cold bath method.

Without doubt Dr. Hare's work will prove a valuable addition to the present knowledge of the therapeutics of typhoid fever.

KING'S COLLEGE HOSPITAL REPORTS. Vol. IV. (Oct. 1, 1896—Sept. 30, 1897). Edited by Nestor Tirard, M.D., F.R.C.P., W. Watson Cheyne, F.R.C.S., F.R.S., John Philips, M.A., M.D., F.R.C.P., W. D. Halliburton, M.D., F.R.S. London: Adlard & Son. 1898. Price 7s. 6d.

Old students of King's College Hospital, and others, will welcome a further volume of these interesting reports. The present volume contains much useful reading. We would particularly mention the excellent article on Albuminuria in Children, by Dr. Nestor Tirard, the article on Leucorrhœa, by Dr. Hugh Playfair, and another by Dr. Raymond Crawford on the Enuresis of Childhood. Nor should we omit to mention the continuation of the charmingly written historical sketch by Dr. John Curnow, which is illustrated by a very good likeness of the veteran clinical teacher, Dr. Robert Bentley Todd.

RELIGIO MEDICI AND OTHER ESSAYS. By Sir Thomas Browne. Edited with an Introduction by D. Lloyd Roberts, M.D., F.R.C.P. Revised Edition. London: Smith, Elder & Co.

The writings of Sir Thomas Browne are literary treasures of priceless worth, and members of our own profession will feel specially grateful to Dr. Lloyd Roberts for having so carefully edited, and brought out, the present edition of the *Religio Medici* and other essays by this great master.

The biographical introduction by Dr. Roberts is very interesting and instructive, and will be appreciated by those of our readers who desire to obtain a comprehensive and correct conception of the life and writings of Sir Thomas Browne.

We could wish that these essays could be placed in the hands of all students of medicine at the outset of their course, being persuaded that a perusal of writings containing such noble and elevating conceptions could not fail to exercise a good influence upon their future character and work.

Sir Thomas Browne's writings are studded with literary gems, which even won the admiration of De Quincey and Carlyle. Take the following for example: "I would not entertain a base design or an action that should call me villain, for the Indies; and for this only do I love and honour my own soul, and have me thinks two arms too few to embrace myself. Aristotle is too severe, that will not allow us to be truly liberal without wealth, and the bountiful hand of fortune; if this be true, I must confess I am charitable only in my liberal intentions and bountiful well-wishes. But if the example of the mite be not only an act of wonder, but an example of the noblest charity, surely poor men may also build hospitals, and the rich alone not have erected cathedrals." Again, "To thoughtful observers the whole



world is a phylactery; and everything we see an item of the wisdom, power, or goodness of God. Happy are they who verify their amulets and make their phylacteries speak in their lives and actions." Again, "If thou hast dipt thy foot in the brink, yet venture not over Rubicon. Run not into extremities from whence there is no regression. In the vicious ways of the world it mercifully falleth out that we become not extempore wicked, but it taketh some time and pains to undo ourselves. We fall not from virtue like Vulcan from Heaven, in a day." And yet again, "He is like to be mistaken, who makes choice of a covetous man for a friend, or relieth upon the reed of narrow and poltroon friendship. Pitiful things are only to be found in the cottages of such breasts; but bright thoughts, clear deeds, constancy, fidelity, bounty, and generous honesty are the gems of noble minds; wherein (to derogate from none), the true heroic English gentleman hath no peer." And so we might go on quoting, with great pleasure, but we must refer our readers to the work itself, which has been produced in charming style and with excellent taste, by Messrs. Smith Elder & Co., the publishers.

THE VALUE OF CERTAIN DRUGS IN THE TREATMENT OF GOUT. By Arthur P. Luff, M.D., B.Sc., F.R.C.P.Lond. Reprinted from the *Lancet*, June 11, 1898. London: The Lancet Offices.

This is a reprint of an article which recently appeared in the pages of the *Lancet*, in which the author gives his views on the value of certain drugs in the treatment of the gouty diathesis. Dr. Luff treats the subject in a clear and scientific manner, and his views have attracted much attention in the profession. Dr. Luff's investigations of the effects of various alkaline drugs on the solubility of sodium biurate, included a series of interesting experiments similar to those which he described in his Goulstonian Lectures delivered before the Royal College of Physicians in 1897. His object was to compare the solubility at a temperature of 100° Fahr., of sodium biurate in artificial blood serum, and in artificial blood serum containing different proportions of the various drugs. The drugs which were separately experimented with were the following: potassium bicarbonate, potassium citrate, lithium bicarbonate, lithium citrate, sodium bicarbonate, sodium phosphate, piperazine, and lysidine.

In his experiments Dr. Luff employed these drugs in greater proportions than could possibly be introduced into the blood by medicinal administration. The results of the experiments are shown in a series of carefully prepared tables, and the conclusions arrived at by the author are as follows:—(1) The ordinary alkalies, the lithium salts, piperazine, and lysidine, do not exercise any special solvent effect on sodium biurate, and their administration to gouty subjects

with the object of removing uratic deposits in the joints and tissues appears to be useless. (2) Sodium salicylate does not exercise any special solvent effect on sodium biurate. Its administration with the object of removing uratic deposits in the joints and tissues appears to be useless, and, moreover, it is apparently contra-indicated in gout on account of its leading to an increased formation of uric acid in the kidneys.

**BABY FEEDING, OR HOW TO REAR HEALTHY CHILDREN.** By A Doctor. Specially written for the Wives of the Working Classes. Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd., 1898. Price 4d.

Messrs. John Wright & Co., of Bristol, have here published a very useful little manual on Infant Feeding, which has been specially written by "A Doctor" for the wives of the working classes. It contains much valuable information as to the rearing and management of children, with which all mothers and others interested ought to be acquainted. In order to bring it within the reach of the working classes, it is published at the low price of 4d., and packets for free distribution can be obtained at reduced rates. Here is an opportunity for usefulness on the part of that benevolent class of ladies who are always ready to engage their services in works of charity and social reform, but who sometimes so engage themselves neither wisely nor well. By securing a wide distribution of this little manual amongst working class mothers, they would promote the health and longevity of untold numbers of children, and the happiness and prosperity of thousands of families.

**POPULAR GUIDE TO THE USE OF THE AIX-LA-CHAPELLE WATERS.**  
By W. A. Lieven, M.D. Aix-la-Chapelle: P. Urlichs, 1898.

This is a modest little work, but albeit will be found very useful to English visitors to Aix-la-Chapelle. Within the compass of sixty-four small pages, much useful information has been brought together by Dr. Lieven relating to the Springs, Baths, Attractions, and Resources of this important Spa.

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**THE ELECTRO-NEUROTONE.**—We have had submitted to us several forms of this apparatus, and have been pleased with the trials we have given them. The apparatus is an ingenious arrangement by which local faradisation can be applied to the body. The special principle of the apparatus consists in the facility with which faradisation can be applied to any part by

means of a single electrode. Rather we should say, that the two electrodes are brought into close apposition in one instrument, which can be held in one hand and moved from part to part with perfect facility. These electrodes are constructed of nickel-plated steel in such a manner as to render the employment of sponges unnecessary. The apparatus is exceedingly simple, a small but powerful induction coil being attached to the twin electrode, and the current being obtained from a small dry cell to which the instrument is attached by flexible wires. We feel sure that the invention will prove extremely useful to medical practitioners who desire a simple, cleanly, and efficient apparatus for the application of the faradic current.

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## Scientific Gleanings.

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### CANCER AND TUBERCULOSIS.

THE movement which has just been organised to prevent the dissemination of consumption is undeniably a step in the right direction, but among many prominent members of the medical profession anxiety is felt, not so much with respect to tuberculous disease as to the rapidly advancing progress of cancer. That there are real grounds for this anxiety anyone can determine for himself by glancing at the mortality rates for cancer in the Registrar-General's returns for the last two or three decades. Despite every effort on the part of certain statisticians to prove the contrary, authorities are now generally agreed that the death-rate from malignant disease is greatly increasing, and that this increase is real and not merely apparent.

The problems of cancer dissemination are, however, infinitely more complex than those of the spread of tuberculosis. Indeed, it may be said, that with the discovery of the tubercle bacillus, the *fons et origo* of the latter disease—its mode of dissemination at once became plain. This knowledge has ever since been turned to good account, and especially so during the last decade. Preventive measures have been elaborated and carried out with the immensely gratifying result that for some years now the mortality from tuberculous diseases in this country has shown a marked declining ratio. Some part, perhaps, of this gratifying result should be attributed to improved methods of treating the various manifestations of the malady; for example, much is nowadays being done in the treatment of what may be called surgical tuberculosis. Wherever possible, local infections of tubercle, as in the case of tuberculous glands, are removed, and thus it has come to pass that surgery has been able to relieve many tuberculous patients of their trouble who in former days would probably have succumbed to general infection. Upon the whole, then, taking a general survey of the position of tuberculosis, as a cause from human mortality, we cannot admit that much ground for despondency exists. In the first place, we have abso-

lute knowledge of the cause of the disease ; secondly, this knowledge has enabled us to devise various means for the prevention of its dissemination ; and thirdly, there are figures to show that the mortality of tuberculous affections is a diminishing one. Lastly, if sentiment were allowed to intrude into the matter, no one could dispute its verdict, that, fatal as tuberculosis often is, its victims are generally cheerful ; even in their declining days consumptive persons are often curiously buoyed up with cheerful hopes of ultimate recovery. They do not suffer much, and despite the long wearying days of gradually waning strength, when the last scene of all comes, they still leave the world with regret. Such is tuberculosis in its most fatal form. But change the picture and look upon cancer. What, then, do we find ? A horrifying display of human anguish, a disease which tends to destroy everything which is good both in man's soul and body, and one which can and does inflict fiendish torture. The world soon becomes hateful to its victims, and shuddering at the fate which is theirs, they look forward with eager impatience to the release which death alone can bring.

Sentiment, however, aside, the position of our knowledge with regard to cancer and its causes is terribly serious. The whole subject is still an insoluble problem. . . . Despite, however, the want of success so far, the bacteriologists who have devoted themselves to this subject continue to prosecute their researches, deriving encouragement from the firm conviction that the development and progress of cancer as a disease so closely accords with the features of an infective malady that the discovery of a characteristic micro-organism must only be a question of time.—*Medical Press*.

#### THE MIGRATION OF BIRDS.

One of the principal reasons for all the apparent mystery which surrounds the migration of birds to this day is that they generally arrive and also take their departure at night, and even when forced to travel by day, fly at such a height that they are invisible to the naked eye. In spite of the great attention paid to this phenomenon in all ages, it is only during the last thirty or forty years that real light has been thrown on the subject

by the efforts of such men as Seebohm, Harvie-Brown, Gatke, and others. . . . We may roughly divide the migratory birds into three classes : first, those that breed in the temperate zone ; secondly, those that breed in the Arctic regions ; and lastly the partial migrants. Taking these classes in the order I have enumerated, those birds which breed in the temperate zones migrate mostly to countries on the Equator, and even very far south of it. In Europe such birds as the martins, swallows, swifts, warblers, quail, landrail, storks, and many others, migrate to Central and South Africa, even as far as the Cape of Good Hope. In Asia the bulk of the migrants take up their winter quarters in Southern India, Ceylon, Southern China and the Malay Archipelago, while some even winter in Australia, including the birds which come from Japan.

In the New World the birds of the temperate zone are rather perplexing in their migratory habits. Many of those which go north to Canada and Alaska in the summer pass the winter in Mexico, Panama, and even South Columbia ; while others, as well as a number of migrants from the United States, go over to the West Indies. One of the most wonderful instances of migration is that of the tiny flame-breasted humming-bird (*Selasphorus rufus*), which breeds on the west coast of America as far north as Alaska and Behring Island, and winters in Lower California and Mexico. Thus, with unerring instinct, this diminutive bird scarcely two inches long, flies twice a year the astounding distance of over three thousand miles. The birds which belong to the second class—those which breed in the Arctic regions—comprise the swans, many of the waders, and a considerable number of ducks and geese. In Europe these birds spend the winter in all the countries from England south to the Mediterranean and Black Seas, some even going as far south as the upper reaches of the Nile. In Asia most of the waders, such as snipe, woodcock, sandpipers, and plovers, as well as the ducks and the geese, spend the winter in India and South China. In America the Arctic birds migrate to the Southern United States and Mexico.

The partial migrants which form the third class, are rather more puzzling in their movements, for among them we find birds whose motives for wandering are very diverse. Some are

unwilling slaves—*i.e.*, they get mixed up in the big flights of true migratory birds and are irresistibly hurried along with them; such are the rooks, starlings, robins, &c., which are so frequently seen in Heligoland in the midst of flocks of swallows, warblers, and other genuine migrants. Another lot of these partial migrants are those which perhaps most justly deserve this name, *viz.*, such birds as larks, pipits, titmice, &c., which, although resident with us all the year round, at times greatly diminish in numbers owing to more than half the individuals changing their abode. For instance, those which breed in Scotland and England wander in the winter over to France, but, unlike the true migrants, always leave some of their number behind.—*Extract from "The Birds of the Bass Rock," by Walter Rothschild, in the "Nineteenth Century."*

#### A FASCINATING ISLAND.

"Of all fascinating places under the sun," said a gentleman who had travelled much, "the Island of Tahiti, one of the Society Islands, is the most fascinating. In that country—a little earth lost in a vast ocean—nature has done everything to make indolent souls happy. The climate is temperate, and even all the year round, the vegetation is luxuriant, the women beautiful, and the nights, full of perfume and mystical light, stir the most practical mind to love of meditation and dreaming. The influence of this dreamy, lazy life is very insidious. It is not necessary to work, as the island furnishes food without the labour of tillage. I know a number of Americans and French who have gone there for a visit, and have become so enraptured with the languorous existence that, like the visitors to lotus-land, they lie down and forget friends, home, ambition, and everything. I remember how I used to feel the influence steal upon me. Many a time I wished earnestly to cast my lot with those languorous people. I can look back now and see myself as I lay one night against a cocoanut-tree in a sort of ecstasy of meditation. Overhead was a sky bright with a million stars. Sounds came to me in a strange fashion, blending into a murmur. A short distance away a group of natives, girls and men, were shouting the rhythmic chant of the upu-upu dance. I thought

of myself on this little isle, with ocean on every side and New Orleans so many miles distant. Nothing seemed real to me but that spot in which one could hear indistinctly the chant of the singers and the sobbing of the waves ; a mysterious charm possessed me."—*Mexican Herald*.

#### HOW LOURDES BECAME FAMOUS.

Lourdes, one of the most extraordinary products of the nineteenth century, the headquarters of the greatest pilgrimage of modern times, has recently celebrated its twenty-fifth anniversary, and marvellous have been the rejoicings. Hundreds and thousands have journeyed hither to throw themselves at the feet of *L'Immaculée* ; consequently, what may fitly be termed the Silver Wedding of Lourdes has been kept with unbounded exultation. The Pyrenean village is to-day one of the mightiest strongholds of Roman Catholicism, and it may be added, for its size, the most prosperous. Those who have appreciated at its full worth the splendid art of ancient Rome, who have peeped into well nigh all the picture galleries of Europe and beheld the wondrous paintings of old masters, most of which were executed for the Romish Church, cannot have failed to recognise the depth of gratitude due to the monks of yore who fostered learning and advanced civilisation, or to realise that in the past the faith they held was the living motive power of the world of thought. That time is, to a certain extent, past ; nevertheless, the old religion still holds sway, and as we peep into the mysteries of Lourdes we feel that sway has lost none of its power. . . .

"But how," it may naturally be asked, "did this up-to-date, prosperous town achieve such greatness ? What is the origin of the fame of a small village that less than half a century ago was sleeping quietly, as it had slept for hundreds of years previously, on the borders of the Pyrenees, between Pau and Argèlès ?" It was not really in the mountains, so visitors passed by unheeding, because they preferred to get into the Hautes Pyrénées and enjoy the higher air, rather than stop at the entrance of the chasm in uninteresting Lourdes. No traveller then had ever heard of this village ; it was a peaceable, quiet kind of a place, where the Basque peasants plied their simple trades—the women



spinning, and the men tending their kine—until the year 1858—but forty years ago. Well may the people of Lourdes bless the name of Bernadette, for their little hamlet has within the time mentioned become a large, flourishing, and rich town; magnificent hotels are crammed to overflowing, the coffers of the church contain untold wealth, and prosperity is written large on the face of every inhabitant. Not so very many years since children played down by the river, where the trees grew almost to the water's edge, and rocks rose somewhat perpendicularly. They gambolled and frolicked among the rocky boulders, in the midst of which there stands a cave. It is not a remarkable cave; perhaps in front some thirty or forty feet high and wide, and very narrow at the back. Sauntering idly by the riverside one day in the year 1858, the daughter of a miller, a girl about fourteen years of age, described as "frail, delicate, of boundless virtue and innocence," paused by the mouth of this grotto, where in a little indenture of the rock itself the wind suddenly rustled the leaves on moss and creeper-grown walls. When Bernadette glanced half frightened towards the spot whence the mysterious noise proceeded, she beheld an apparition of the Virgin. In a French book we are told that the girl, choking with emotion, raised her head, but she immediately felt paralysed, and fell on her knees.

A stone slab on the roadway opposite chronicles:—"Place où priait Bernadette, le 11 Février, 1858." Yes, there, amid rustic surroundings, stood a vision of incomparable beauty haloed with celestial light. She was quite young, carried herself with the "faith of a Virgin, the gravity of a mother, and the majesty of a Queen." Her smile was of infinite grace, her eyes were blue, and her mouth possessed an expression of sweetness and virtue. She was robed in white, the long garment she wore reaching below her bare feet; a blue girdle fell from the folds that covered her head. From that hour Lourdes became famous. Several times the Virgin reappeared to Bernadette, and on one of these occasions stepped forward, and, after promising to the girl happiness in this world as well as in that to come, begged her to ask the priests to build a church near the spot, where the sick might drink, and be bathed in the waters. It is this spring that

has worked such miracles in France, and, according to good Catholics, all over the world. Even bathing the dead at Lourdes to bring back life has been tried, but so far without success. The last time the apparition appeared Bernadette asked the vision's name, and received the reply: "*Je suis l'Immaculée Conception.*"

Accounts of this apparition were told and retold; the story became more and more wonderful in progress of repetition, till suddenly Bernadette was transformed into a saint. People rushed from all parts of the country to kiss the hem of her frock, or even kneel before her. Imagination was aroused, seeds of mystery grew apace in excitable minds, and before long thousands flocked to see the favoured child and the scene of the appearance, until Bernadette herself had to seek the protection of the Church—the tale of her persecution making her a martyr. She was brought before the magistrates, but refused to admit the apparition was a dream—although some of the doctors who examined her affirmed the whole thing to be a case of hysteria. All this brought at first an almost unpleasant notoriety to Lourdes, the priests felt alarmed, and visitors and pilgrims were for a time prohibited. As the story became more and more known, and the village more and more prosperous, the girl attracted so much attention that the Church had to intervene once again and sent Bernadette to a convent, in order that she might live in retirement. Although then over 14 years of age it is on record that the nuns experienced difficulty in teaching her to read and write, for her intellect appeared to be none of the brightest.—*Extract from "A Pilgrim of Lourdes," by Mrs. Alec Tweedie, "Pearson's Magazine."*

#### COMBINED RADIATION AND ARC LIGHT TELEGRAPHY.

In the course of experiments conducted with the object of confining Hertzian waves to one particular direction, and of preventing of such messages being taken up by any but the desired receiver, Professor Karl Zickler, of Brünn, Moravia, has come to some interesting results. The apparatus used for radiation telegraph are such that transmitter mirrors, of which much was

expected originally, must be of very large dimensions. It has further been ascertained that the oscillatory disturbances emanating from the customary forms of Hertzian vibration decrease so rapidly in amplitude that almost any receiver will respond to some extent. By means of syntony secrecy can hence be obtained to a small degree only. Professor Oliver Lodge has realised increased discrimination by syntony, with the help of two separated induction coils, in which the magnetic energy exceeds the electric energy. Professor Zickler has had recourse to the fact which he learned from Hertz's researches, that the ultra-violet rays given out by an ordinary arc lamp, facilitate the discharge between electrodes. He concentrates the beams of an arc lamp by placing it between a concave mirror and a lens. Not to cut off the ultra-violet rays, the lens must be of crystal; for the same reason the mirror should not be made of glass silvered at the back. A glass screen fixed in front of the crystal lens will not disturb the visible beam, but will stop the ultra-violet rays. The receiver consists essentially of a spark gap inserted in the secondary circuit of an induction coil, and of a coherer, a secondary relay, or a telephone. The gap is too wide to allow the discharge to pass unless the ultra-violet ray play upon the receiver. By manipulating the glass screen after the manner of a shutter of a camera, Morse signals can be given. Zickler has found the following arrangement most suitable: A glass chamber filled with rarefied air (partial vacuum of 200 millimetres of mercury) or some other gas, contains the two spark electrodes, a sphere and a disc, both made of platinum, the latter inclined at  $45^{\circ}$  to the longitudinal axis of the chamber, like the anti-cathode in an X-ray tube. On the front of the chamber, which is closed by a pane of crystal, is fitted a telescope tube with an object lens of crystal upon which the arc light beam falls. The length of the spark gap is not altered, but the resistance of the circuit is adjusted to the desired degree of sensitiveness. In the *Elektrotechnische Zeitschrift*, Zickler explains that with the imperfect apparatus at his disposal, he has, as yet, only been able to telegraph through a distance of 200 metres: this with an arc lamp of 25 amperes and 54 volts and an arc of 10 millimetres. The concentrating lens of the receiver

was not required in that instance ; the weather was dull and rain threatening. For long-distance signals we should want strong arc lamps. But we have powerful search-lights at our command, especially on light-houses and on board ship, where this new kind of telegraphy might be utilised for communication between vessels and the shore and for naval operations. This is an application which will occur to everybody. Zickler also speaks of communication between fortresses and approaching armies. The large Schuckert search-light of the Chicago Exhibition was visible at Milwaukee, eighty miles distant. In foggy weather the arc does not penetrate very far, but it may be possible to strengthen the ultra-violet rays which alone are needed. The circuit of the receiving battery and induction coil would permanently have to be closed ; the current consumption would be insignificant, however. The call does not cause any difficulties.—*Engineering*.

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### Notes, News and Items.

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THE opening meeting of the Session of the British Balneological and Climatological Society will be held on the 31st inst., when the incoming President, Dr. R. Fortescue Fox, of Strathpeffer Spa, will deliver an address on "The Province of the Spa Physician."

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THE Fifth International Congress on Potable Waters, Mineral Waters, and Medical Climatology and Geology was held at Liège on September 25 to October 3, under the patronage of the Crown Prince of Belgium. There were receptions by the municipalities of Liège, Spa and Aix-la-Chapelle, and visits were paid to various places, including Ostend, Middelkerke, and Wenduine. The Congress Committee liberally provided a free ticket to all foreign members through the whole of Belgium.

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THE American Climatological Association held their Fifteenth Annual Meeting at the Maplewood Hotel, near Bethlehem, New Hampshire, on August 31 and September 1. The President, Dr. E. O. Otis, of Boston, delivered the opening address, the subject he took being Avenbrugger and Laennec, the discoverers of auscultation and percussion.

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THE new portion of the University College of Wales, Aberystwyth, will be opened by Sir William Harcourt on October 26. The erection of this extension has cost nearly £20,000. In the evening of the same day the inaugural lecture will be given by the Master of Trinity College, Cambridge, and on the following day the degrees of the Welsh University will be conferred at Aberystwyth.

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THE Teignmouth Infirmary Fifteenth Annual Report shows that during 1897 there were 162 in-patients admitted, and 1662 out-patients treated. This is an increase on the previous year, 1896. The receipts, unfortunately, show a diminution of about £60.

PRESENTATION.—Mr. G. H. Ward-Humphreys, M.R.C.S. Eng., L.R.C.P.Lond, who is leaving Cheltenham, was presented with a silver tea-tray, designed according to the Louis Quinze period, and a silver tea and coffee service, and was entertained at dinner at the Queen's Hotel of that town, on September 6. After dinner, Dr. Ward-Humphreys proposed the toast "Floreat Cheltonia." He made an entertaining speech, and the toast was responded to by Mr. Agg-Gardner.

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THE people of the Isle of Man can account for many things, but apparently an explanation of the heavy decrease in the traffic returns during the month of August is beyond them. It is possible that they may with justice attribute some of the falling off to the unusual number of disasters that have occurred off the Manx coast during the summer, and in that case they may be spurred on to overhaul the regulations respecting yachting, boating and bathing. The Douglas coroner gave them sound advice on these points some time ago.

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MR. JOHN TWINAME GARDNER, L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., was, a short time ago, presented with a seventy-guinea grandfather's clock, by the members of the Ilfracombe Choral Society, in recognition of his services as honorary conductor. Mrs. Bassett, of Watermouth Castle, in the presence of a large gathering made the presentation.

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THE Chairman of the Keynsham Board of Guardians announced at their meeting on July 26, that the candidate whom they wished to appoint as nurse had withdrawn her application, the reason being that there was no sea view at Keynsham. The young lady was also disappointed there was no tennis court for her use. Some considerable discussion took place upon the bill for travelling expenses which the candidate had incurred, but eventually the guardians decided to allow them.

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# British Balneological & Climatological Society.

SESSION 1898—99.

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\*.\* Fellows are requested to send notice of any corrections that may be necessary in the foregoing lists to the Honorary Secretaries of the Society.

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liam.  
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LISDOONVARNA. — Westropp, W.  
Stacpool.

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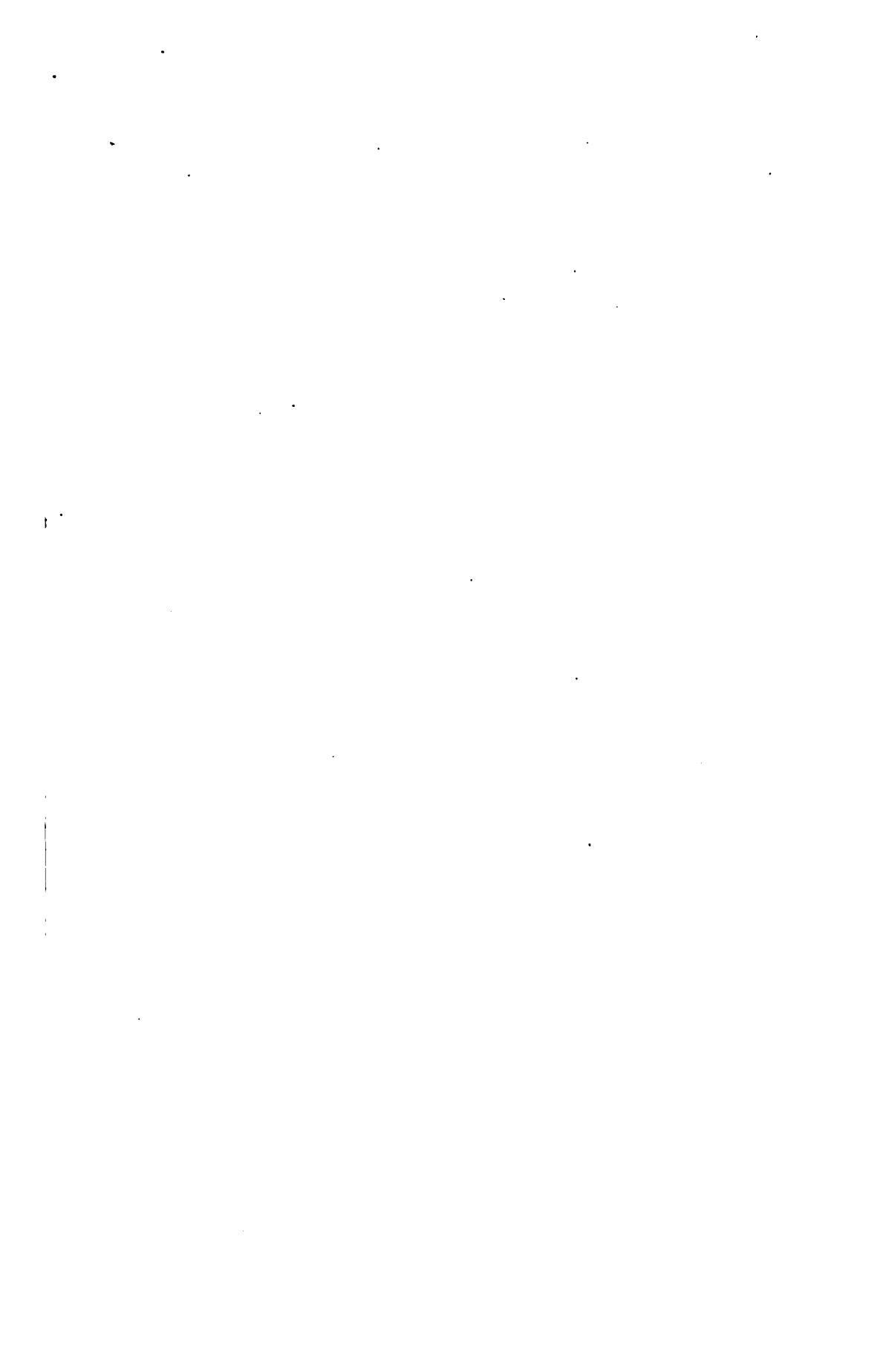
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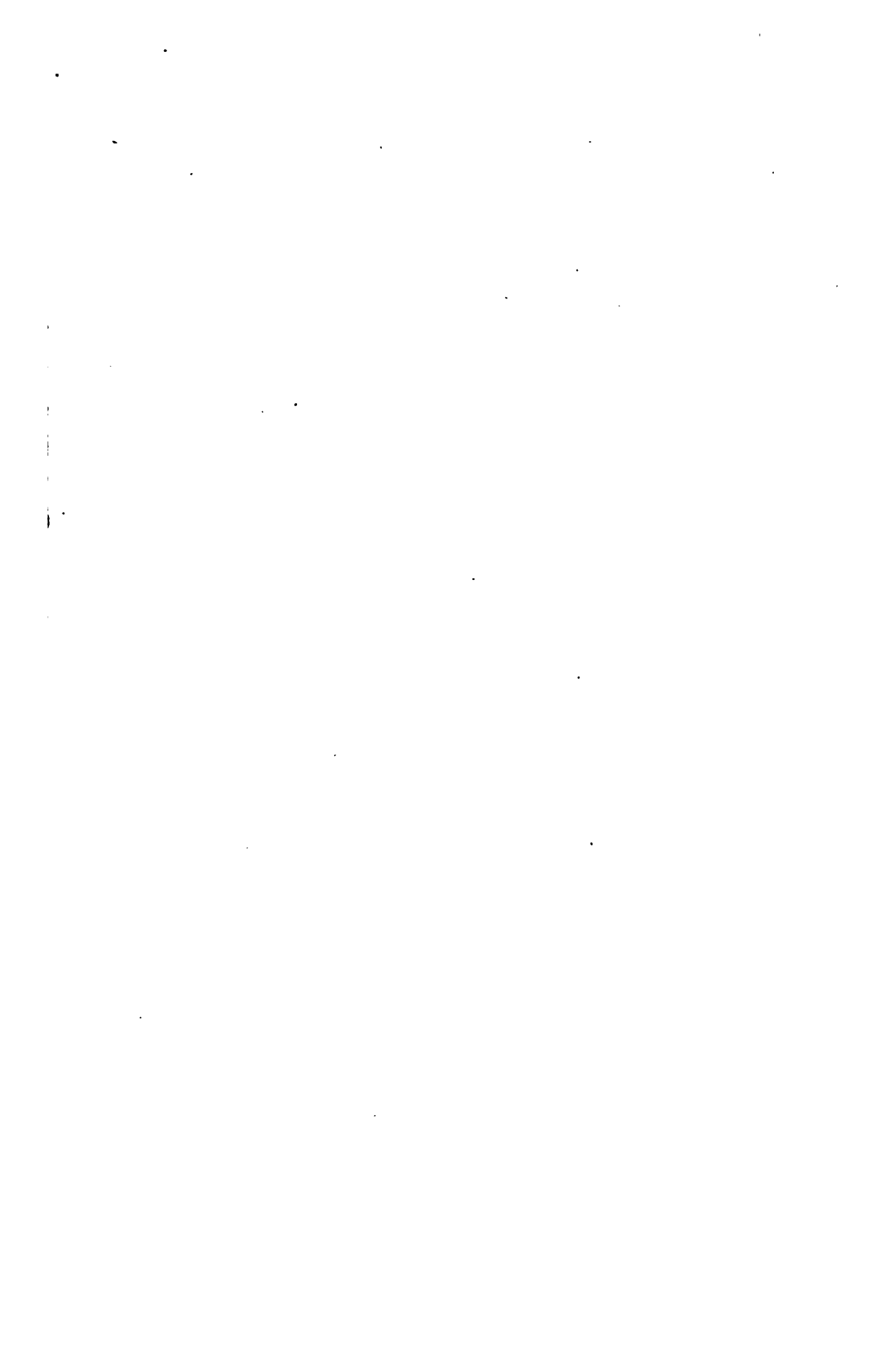
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